HARVARD SCHOOL OF PUBLIC HEALTH

Courses of Instruction

1958–1959

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1958-59

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Boston, Massachusetts

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Section I
Introductory Information

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1959

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1960

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John Phillips Marquand, A.B., LITT.D., L.H.D.
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Meyer Kestnbaum, S.B., M.B.A.
David Rockefeller, S.B., PH.D.

1961

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Malcolm Endicott Peabody, A.B., B.D.
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1962

Edward Streeter, A.B.
Frederic Bennett Whitman, A.B., M.B.A.
Frederick August Otto Schwarz, A.B., LL.B.
Stanley Marcus, A.B.
Thomas Harrison Hunter, A.B., B.A., M.D.

1963

Raymond Sanger Wilkins, A.B., LL.B.
Devereux Colt Josephs, A.B., LL.D.
Dwight Parker Robinson, Jr., A.B., M.B.A.
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John Fitzgerald Kennedy, S.B., LL.D.

1964

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Massachusetts Hall, Cambridge.

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President: NATHAN MARSH PUSEY, PH.D., LL.D., L.H.D.
Office, 1 Massachusetts Hall, Cambridge.

Dean: JOHN CRAYTON SNYDER, A.B., M.D.

Assistant Dean: HUGH RODMAN LEAVELL, S.B., M.D., DR.P.H.

Assistant Dean: JAMES LAVERRE WHITTENBERGER, S.B., M.D.

Assistant to the Dean and Faculty Advisor for Foreign Students: WILLIAM HATHAWAY FORBES, DR.PHIL., M.D.

Assistant to the Dean: ROGER BENHAM SPAULDING, A.B.

Administrative Assistant to the Dean: MARGARET GUSS BARNABY, A.B.

Librarian, Schools of Medicine, Dental Medicine and Public Health:
RALPH THEODORE ESTERQUEST, A.M.
Office, Building A, Harvard Medical School, 25 Shattuck Street, Boston.

Director, Health and Medical Care Program for Students: DONALD ASA TUCKER, M.D.
Office, Peter Bent Brigham Hospital, 721 Huntington Avenue, Boston.

Bursar: CHARLES CROSBY PYNE, S.B.
Office, Lehman Hall, Cambridge.

The Offices of Administration of the School of Public Health are located at 55 Shattuck Street, Boston.

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Frederick Fuller Russell, M.D., S.D. (hon.), *Professor of Preventive Medicine and Epidemiology, Emeritus.*

Ernest Edward Tyzzer, PH.B., A.M., M.D., S.D. (hon.), *George Fabyan Professor of Comparative Pathology, Emeritus* and *Professor of Tropical Medicine, Emeritus.*

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Hugh Rodman Leavell, S.B., M.D., DR.P.H., *Public Health Practice* (*Assistant Dean*).

James Laverre Whittenberger, S.B., M.D., *Physiology* (*Assistant Dean*).

* Arranged, with the exception of the Deans, in order of appointment to present rank.

** For details of title, see listing under the Department.

PHILIP DRINKER, S.B., CHEM.E., S.D. (hon.), LL.D., A.M. (hon.), *Industrial Hygiene.*

GORDON MASKEW FAIR, S.B., S.M. (hon.), DR.ING. (hon.), *Sanitary Engineering.*

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FREDRICK JOHN STARE, S.M., PH.D., M.D., A.M. (hon.), *Nutrition.*

CONSTANTIN PRODROMOS YAGLOU, B.A., S.B., M.M.E., A.M. (hon.), *Industrial Hygiene.*

DONALD LESLIE AUGUSTINE, S.B., S.D., S.D. (hon.), A.M. (hon.), *Tropical Public Health.*

THOMAS HUCKLE WELLER, A.B., S.M., M.D., LL.D., *Tropical Public Health.*

HAROLD ALLEN THOMAS, JR., S.D., *Sanitary Engineering.*

DANA LYDA FARNSWORTH, A.B., S.B., M.D., *Henry K. Oliver Professor of Hygiene* and *Director of University Health Services.*

MARTHA MAY ELIOT, A.B., M.D., L.H.D., S.D. (hon.), LL.D., *Maternal and Child Health.*

ROSS ARMSTRONG MCFARLAND, A.B., PH.D., S.D. (hon.), *Industrial Hygiene.*

LESLIE SILVERMAN, S.D., *Industrial Hygiene.*

BRIAN MACMAHON, M.D., PH.D., D.P.H., S.M. IN HYG., *Epidemiology.*

ASSOCIATE PROFESSORS

DAVID MARK HEGSTED, S.M., PH.D., *Nutrition.*

LEONID SERGIUS SNEGIREFF, M.D., DR.P.H., *Public Health Practice.*

EDWARD STEVENSON MURRAY, A.B., M.D., M.P.H., *Microbiology.*

JANE WORCESTER, A.B., DR.P.H., *Biostatistics.*

JOHANNES IPSEN, C.A., C.M., DR.MED., M.P.H., *Microbiology.*

ROBERT BALENTINE REED, PH.D., *Biostatistics.*

BERTHA SHAPLEY BURKE, A.M., *Maternal and Child Health.*

ELIZABETH PRINCE RICE, A.B., S.M., *Maternal and Child Health.*

GERALD CAPLAN, B.SC., M.B.,CH.B., M.D., *Public Health Practice.*

JERE MEAD, S.B., M.D., *Physiology.*

CHARLES REGAN WILLIAMS, PH.D., *Industrial Hygiene.*

BENJAMIN DAVID PAUL, A.B., PH.D., *Public Health Practice.*

HARVARD UNIVERSITY

Robert Pershing Geyer, s.m., ph.d., *Nutrition.*
Jean Mayer, b.a., ph.d., d.sc., *Nutrition.*
Martha Fredericka Trulson, s.b., m.p.h., s.d. in hyg., *Nutrition.*
William Morris Schmidt, m.d., *Maternal and Child Health.*
Benjamin Greeley Ferris, Jr., a.b., m.d., *Physiology.*
Franklin Allen Neva, s.b., m.d., *Tropical Public Health.*
Ozzie Gordon Simmons, s.b., ph.d., *Public Health Practice.*
Edward Parish Radford, Jr., m.d., *Physiology* (from December 1, 1958).

Clinical Professor

Samuel Brown Kirkwood, a.b., m.d., *Maternal and Child Health.*

Associate Clinical Professor

Abraham Daniel Rubenstein, a.b., m.d., m.p.h., *Epidemiology.*

Lecturers

Helen Lucile Roberts, a.b., m.d., m.p.h., *Public Health Practice.*
William Hathaway Forbes, dr.phil., m.d., *Physiology.*
Irwin Taylor Sanders, a.b., ph.d., *Public Health Practice.*

Assistant Professors

Alfred Leo Frechette, m.d., m.p.h., *Public Health Practice.*
Thomas Feger Pugh, m.d. m.p.h., *Epidemiology.*
Warren Taylor Vaughan, Jr., s.b., m.d., *Public Health Practice.*
Robert Shihman Chang, s.b., m.d., s.d. in hyg., *Microbiology.*
Samuel Dennis Bell, Jr., a.b., m.d., m.p.h., *Microbiology.*
Pauline George Stitt, m.d., m.p.h., *Maternal and Child Health.*
Carl Ernest Taylor, s.b., m.d., dr.p.h., *Epidemiology.*
Stephen Bourne Andrus, s.b., m.d., *Nutrition.*
Charles Edgar Billings, s.m., *Industrial Hygiene.*
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SCHOOL OF PUBLIC HEALTH

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Mary Ochsenhirt Amdur, s.b., ph.d., *Physiology.*
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Sol Levine, ph.d., *Public Health Practice.*
Oscar William Portman, s.b., m.d., *Nutrition.*
Joseph John Vitale, s.b., s.m., s.d. in hyg., *Nutrition.*
Edward Allen Mason, a.b., m.d., *Public Health Practice.*
Ruth Goodridge Cumings, s.b., a.m., *Maternal and Child Health.*
Marjorie Anne Christina Young, ed.m., dr.p.h., *Public Health Practice.*
Albert Damon, a.b., ph.d., m.d., *Industrial Hygiene.*
Harben Jay Boutourline-Young, m.b.,b.s., m.d., *Physiology.* (Absent 1958–59)
Joseph James Fitzgerald, s.m., *Industrial Hygiene.*

Assistant Clinical Professor

Leon Sternfeld, s.b., m.d., ph.d., m.p.h., *Maternal and Child Health.*

Associates

Frank Randolf Philbrook, s.b., m.d., m.p.h., *Epidemiology.*
Mary Louise Quaife Bolliger, a.b., s.m., ph.d., *Nutrition.*
Isabelle Valadian, m.d., m.p.h., *Maternal and Child Health.*
Margaret Elizabeth Drolette, a.b., m.p.h., *Biostatistics.*
Sidney Seymour Lee, s.b., m.d., dr.p.h., *Public Health Practice.*
Maria Banasiewicz-Rodriguez, m.d., m.p.h., *Nutrition.*
Louis Charles Fillios, a.b., s.d. in hyg., *Nutrition.*
Nedd Robert Frank, a.b., m.d., *Physiology.*
Robert Alvan MacCready, s.b., m.d., *Microbiology.*
James Addison McComb, d.v.m., *Microbiology.*

The names of the members of the teaching and research staff are listed in their respective departments under Content of the Courses, pages 43–85.

THE COMMITTEE APPOINTED BY THE BOARD OF OVERSEERS TO VISIT THE SCHOOL OF PUBLIC HEALTH

1958–59

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Baltimore City Health Department

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INTRODUCTION

The Harvard School of Public Health is one of the six privately endowed institutions in the United States which are primarily devoted to graduate education in public health. The School operates as an independent unit of Harvard University in close association with the Faculty of Arts and Sciences, the Graduate School of Education, the Medical School, the School of Dental Medicine, and the various Harvard hospitals. This introduction indicates in a general way the opportunities the School affords those students who are seeking a career in one or more of the three principal areas of public health activities: teaching, research, and administration.

Public health evolved from the early combination of medical science and engineering for the control of environmental hazards. Public health has now grown to embrace various facets of the biological, physical and social sciences as the community aspects of health problems have become more complex. In its plans for the future, the Harvard School of Public Health is principally concerned with two general kinds of problems. In the first category are the problems which have emerged as certain areas of the world have become highly urbanized and technologically advanced. Foremost among these problems are mental illness, cancer and the degenerative diseases, accidents, and the hazards of ionizing radiations. Discovery of causes and factors which modify the course of illness and injury is necessary for the development of prevention and control. Research is also needed to achieve effective administrative technics for the provision of optimum health services for entire communities.

The other general category of problems in public health derives from the fact that more than half of the people in the world reside in areas afflicted by malnutrition and communicable disease. The programs which have been successful in the technologically advanced countries often cannot be used because of basic differences in culture, geography or economic factors.

In its approach to these problems the Harvard School of Public Health has as its objective the advancement of public health, both nationally and internationally. The School seeks to accomplish its objective through its activities in education and by its search for knowledge. The Faculty is equally committed to basic research in new fields and to the development of effective methods for the application of knowledge by communities or nations. The Faculty of the School and its alumni have the opportunity to play a role of major importance in the decades ahead as the profession of public health evolves in scope and content to meet the health problems of our rapidly changing societies.

The Faculty has undertaken a major revision of its courses of instruction. The primary intent of the new curriculum in the Harvard School of Public Health is to attract individuals who have the potentiality for original contributions to public health. In the selection of applicants preference will be given by the Admissions Committee to students who are capable of undertaking a course of study leading to a doctoral degree in one of the departments or disciplines of the School.

FACILITIES

Most departments of the School of Public Health are housed in two buildings in the same block: one at 55 Shattuck Street, the other at 1 Shattuck Street, Boston (15). The administrative offices are in the former building. Between the School's two buildings are the Harvard Medical and Dental Schools; the Children's Medical Center is next door, the Peter Bent Brigham Hospital is across the street and the Boston Lying-in Hospital is a block away.

The facilities of the hospitals and the adjacent institutions are available to qualified students of this School, and are used in connection with the teaching of various subjects. In addition, students enrolled at the School may take courses in other departments of Harvard University. Students may enroll for work in the social sciences, public administration, and medical sciences. Certain grad-

uate courses at the Massachusetts Institute of Technology are also open to students of this School.

The Department of Sanitary Engineering of the School is also part of the Division of Engineering and Applied Physics of the Graduate School. The basic course for students of the School of Public Health is taught here, but students may also register for special and advanced courses in Sanitary Engineering given in Cambridge.

Of particular interest to students of this School is the close contact with health agencies in Massachusetts and elsewhere. The divisions of the Massachusetts Department of Public Health not only furnish opportunities for observation and training in their fields, but their staffs enter into the teaching at the School. Administrative methods at local levels may be studied at first hand in the health departments of the cities of Boston, Cambridge, Worcester and the Town of Brookline.

There are two special areas for study and training purposes closely linked to the School. The Whittier Street Health Center, a district health unit of the Boston City Health Department, is used not only for purposes of demonstration and training, but also as a field for research in problems of administration, of mental health, and of human ecology. The other special area includes the territory covered by the Nashoba Associated Boards of Health some 30 miles from the School. It furnishes opportunities for the investigation of rural problems and administrative methods, supplementing those offered by the Whittier Street Health Center.

The Institute of Laboratories of the Massachusetts Department of Public Health is engaged in a program of general interest, attracting visitors and students from various parts of the United States and from foreign countries. It not only performs a wide variety of standard bacteriological, immunological and chemical procedures, but is actively engaged in several research programs. Its Superintendent is a member of the School's faculty. This close contact with one of the country's outstanding laboratories provides unsurpassed opportunities for qualified students who wish to obtain in-

tensive experience in many types of laboratory methods of particular pertinence to public health.

The clinical and laboratory facilities of the Lemuel Shattuck Hospital are available to students of the School. This hospital was built by the Department of Public Health of the State of Massachusetts for the treatment and rehabilitation of patients with chronic diseases. Since the average duration of hospitalization is much longer than that in general hospitals, an opportunity is afforded to study chronic disease problems not encountered in general hospitals. The training program, consultant rounds and professional staff appointments are under the aegis of the Deans of Boston University, Harvard and Tufts University Medical Schools, as well as the Harvard School of Public Health. Research laboratories at the Shattuck Hospital are engaged in studies of arthritis, hematology, pulmonary function, radioisotopes, cancer therapy and chronic renal and hepatic diseases.

Libraries

The joint Library of the School of Public Health and the Harvard Medical School is on the second floor of the Administration Building of the Medical School. It is open from 9 a.m. until 10 p.m. on week days, from 9 a.m. until 5 p.m. on Saturdays, and from 2 p.m. until 6 p.m. on Sundays. There are at present 118,000 volumes, 215,000 pamphlets, and 1,150 current periodicals on file in this library.

Students also have the privilege of using the College Library in Cambridge, as well as the various departmental libraries belonging to the University, in all of which there are more than 4,000,000 volumes and pamphlets.

The Boston Medical Library, No. 8 The Fenway, contains about 225,000 bound volumes and 160,000 pamphlets, and receives 1,050 current periodicals. This valuable library is open on week days from 9 a.m. to 5 p.m., Saturdays 9 a.m. to 1 p.m., and on Mondays and Thursdays until 9 p.m., Oct. 1 through May 31.

Students of the School also have access to the Boston Public Library.

Section II

Admission Requirements
Courses of Study and Degrees

ADMISSION REQUIREMENTS

Procedure in Regard to Application for Admission

Applicants for admission to the School must submit the following material for consideration by the Committee on Admissions and Degrees: (1) completed application form; (2) transcripts of academic record at college, graduate school and/or professional school; (3) names of two people, well acquainted with the applicant's previous work, from whom the School may request letters of reference.

Applicants from countries in which the language of instruction is not English must satisfy the Committee on Admissions and Degrees as to their ability to speak, read, write and understand the English language competently. In order to profit from a program of graduate study, the applicant must have sufficient knowledge of English to enable him to understand lectures in English, to participate in seminar discussions and to write examinations. In the absence of sufficient evidence from the sponsoring agency and other sources, the School may request that the applicant take and pass satisfactorily the University of Michigan English Language Test. If, upon arrival at the School, a student's command of English is found to be inadequate, he may be required to take further instruction in English.

In addition to fulfilling the specific requirements for admission to the several degree programs, applicants must satisfy the Committee as to their scholastic ability and potentiality for profitable study at a graduate level. In all instances, the final judgment as to the admissibility of any applicant rests with the Committee on Admissions and Degrees.

Preference will be given to applicants under forty years of age; applicants over 45 years of age may be considered for admission only if they are exceptionally well qualified.

The School is unable to accept all who apply and are eligible for admission. Therefore, persons who wish to be considered for admission to the 1959–60 Class are urged to submit their applications

by April 1, 1959. However, applications which are completed *by July 31, 1959*, will be considered, subject to availability of space.

Admission of a candidate for one academic year does not automatically admit him in a subsequent year; re-application must be considered on the candidate's own merits in the light of the particular circumstances which govern the decisions of the Committee on Admissions and Degrees.

All inquiries and communications regarding admission should be addressed to the Secretary, Committee on Admissions and Degrees, Harvard School of Public Health, 55 Shattuck Street, Boston 15, Massachusetts.

REQUIREMENTS FOR ADMISSION EFFECTIVE FOR THE YEAR 1958–59

During the past three years the School has undertaken to evaluate its role in graduate education in public health and to revise its educational program with the following objectives in mind: (1) To increase the number of doctoral candidates in the several disciplines of public health; (2) To expand and improve the opportunities for individual study and tutorial instruction; (3) To minimize the pedagogic difficulties inherent in combining candidates with widely different professional backgrounds in the same degree program.

As a first step in moving toward its new objectives, the Faculty voted in June, 1957, to adopt new standards of admission to candidacy for the Master of Public Health and the Master of Science in Hygiene degrees, effective for the year 1958–59. A revision of the courses of instruction in line with these new requirements has been undertaken during the year 1957–58 and the new curriculum becomes effective in September, 1958.

Master of Public Health Degree

Requirements for Admission

1. Applicants may be considered for admission as candidates for the Master of Public Health degree if they are graduates of approved

schools of medicine or if they have similarly thorough preparation in the biological sciences.

2. Persons with these qualifications must satisfy the Committee on Admissions and Degrees as to their scholastic abilities and potentiality for profitable study at a graduate level. In arriving at its decision, the Committee will give consideration to practical experience when relevant.

Requirements for the Degree

1. One academic year must be spent in residence at the University. The student must complete successfully the required and elective courses to a minimum total of 40 credit units. The basic curriculum for the Master of Public Health degree includes courses in ten areas. All candidates for the degree are required to take the following four courses, unless they can demonstrate equivalent preparation:

	Credit units
Biostatistics 1a,b	3.5
Epidemiology 1a	2.5
Public Health Practice 1b,c	3.
Sanitary Engineering 1b	2.5

2. In addition they must elect a minimum of 13 credit units in the remaining six courses of the basic curriculum, as follows:

	Credit units
Ecology and Epidemiology of Infectious Diseases (Microbiology and Tropical Public Health 1a,b)	6
Ecology and Epidemiology of Chronic and Non-infectious Disease (Public Health 41b,c)	3
Environmental Hygiene 1c	2.5
The Human Community (Public Health 1a)	2.5
Principles Basic to the Practice of Maternal and Child Health (Maternal and Child Health 1a)	2.5
Public Health Nutrition (Nutrition 1b,c)	2.5

3. The remainder of the time will be devoted to departmental or divisional courses, seminars and tutorial work. These courses are described on pages 43–85. Courses offered by other Faculties of the University are also available.

4. No classes are scheduled during the two-week period from March 16 to 28, 1959. This time will be used for field or clinic assignments and for tutorial and laboratory work on special projects.

5. Upon completion of all course requirements the student must pass a comprehensive examination. This examination will be given only at the end of a semester.

Doctor of Public Health

For the degree of Doctor of Public Health the student must complete an approved program of independent and original investigation in a special field and must present the results of this research in an acceptable thesis.

Requirements for Admission

1. An applicant for admission to candidacy for this degree must be either (a) a graduate of an approved school of medicine, dental medicine or veterinary medicine, or (b) the holder of another doctoral degree in one of the basic sciences related to public health. In exceptional cases, an individual lacking a previous doctoral degree may be admitted if he has displayed outstanding ability in previous academic work and in practical public health experience.

2. The applicant must hold the degree of Master of Public Health or its equivalent from a recognized institution and must demonstrate ability to undertake original investigation in a special field.

Requirements for the Degree

1. The student is required to complete a minimum of two semesters of resident research. In exceptional cases the required work for the degree may be completed in this year, although generally, preparation of an acceptable thesis will require a longer period.

2. The candidate must possess a reading knowledge of at least one language, other than English, in which there exists a significant body of literature relevant to the candidate's field of study. The

ability to read this language must be demonstrated before the candidate is permitted to take the qualifying examination.

3. After the applicant enters the School, an advisory committee is appointed to review his preparation in the chosen and related fields of study, to pass upon the plan of the proposed thesis, and to determine when the candidate is eligible to take the qualifying examination. This examination is oral, covers the basic public health sciences, and must be passed before the candidate is permitted to proceed with the thesis. Students who enroll in the School of Public Health with the intention of becoming doctoral candidates are expected to complete required courses and pass their qualifying examinations within three years, if not sooner, for full-time students, or four years for part-time students.

4. The advisory committee continues to supervise the student's research, including the preparation of his thesis.

5. After the advisory committee has approved the thesis, it should be typed in final form. Three unbound copies must be deposited in the Dean's office before January first, for degrees to be awarded at midyear, and before May first for degrees to be awarded in June. In some instances the thesis will be submitted to a reading committee, if requested by the advisory committee or the Committee on Admissions and Degrees. Members of the reading committee may be selected from any faculty of the University and will be appointed by the Dean.

6. Each copy of the thesis must be accompanied by a summary not exceeding 1200 words in length, which shall indicate clearly the purposes, methods, and results of the investigation.

7. After the thesis is accepted, the student is given an oral examination by the faculty. The examination is conducted by the Admissions and Degrees Committee and covers the thesis as well as those public health subjects to which the thesis is related. Ordinarily, this must be accomplished within five years after the qualifying examination is passed.

Master of Science in Hygiene Degree

(With Designation of the Field of Concentration)

This degree is granted on fulfillment of a program of advanced work in one of the basic disciplines of public health. The courses taken must form an integrated plan of study in one branch of knowledge and allied subjects.

Requirements for Admission

Applicants may be considered for admission as candidates for the Master of Science in Hygiene degree, on the basis of a one-year or a two-year program, if they meet the requirements in one of the categories listed below. They must also satisfy the Committee on Admissions and Degrees and the department within which they choose to specialize as to their potentiality for successful study at a graduate level within the School.

A. One-year Program

1. Applicants who are graduates of approved schools of medicine or who have similarly thorough preparation in the biological sciences.
2. Applicants in public health specialties (social workers, nurses, health educators, nutritionists) who have obtained a master's degree with honor grades in their special fields and have had at least two years' acceptable experience in a public health activity.
3. Applicants in industrial hygiene or public health engineering who have a bachelor's degree with honor grades in physics, chemistry and engineering and who have a master's degree or equivalent graduate work with honor grades.
4. Applicants who have a doctoral degree from an approved school in a discipline related to public health.

B. Two-year Program

1. Applicants with a bachelor's degree obtained with honors in the natural sciences who wish to specialize in one of the laboratory sciences or statistics.

2. Applicants with a bachelor's degree obtained with honors and with an adequate background in the natural sciences who wish to specialize in health education.

Under certain circumstances, a year of graduate work in another institution may be accepted as the first year of this program.

Requirements for the Degree

1. The student must spend a minimum of one year in residence at the University and must complete successfully a program of at least 40 credit units. Candidates in the two-year program must obtain at least 80 credit units.

2. All candidates for the degree are required to take Biostatistics and Epidemiology (Public Health 40a,b,c) or, depending on their backgrounds, Biostatistics 1a,b and Epidemiology 1a, unless they can demonstrate equivalent preparation. The remainder of the program will be devoted to courses which may be prescribed by the department of concentration and to elective courses in the primary and related fields of interest. These courses are described on pages 43–85. Courses offered by other Faculties of the University are also available.

3. No classes are scheduled during the two-week period from March 16 to 28, 1959. This time will be used for field or clinic assignments and for tutorial and laboratory work on special projects.

4. Upon completion of all course requirements the student must pass a comprehensive examination. This examination will be given only at the end of a semester.

Doctor of Science in Hygiene

(With Designation of the Field of Concentration)

This degree is granted on successful completion of a program of independent and original research in one of the basic disciplines of public health, and the presentation of this research in an acceptable thesis.

Requirements for Admission

Candidates for the degree of Doctor of Science in Hygiene must hold the degree of Master of Science in Hygiene or its equivalent and must indicate ability to undertake original investigation in a special field.

Requirements for the Degree

1. The student is required to complete a minimum of two semesters of resident research. In exceptional cases the required work for the degree may be completed in this year, although generally, preparation of an acceptable thesis will require a longer period.

2. The candidate must possess a reading knowledge of at least two languages, other than English, in which there exists a significant body of literature relevant to the candidate's field of study. The ability to read these languages must be demonstrated before the candidate is permitted to take the qualifying examination.

3. After the applicant enters the School, an advisory committee is appointed to review his preparation in the chosen and related fields of study, to pass upon the plan of the proposed thesis, and to determine when the candidate is eligible to take the qualifying examination. This examination is oral, covers the chosen and related fields of study as well as the course work represented by the Master of Science in Hygiene degree, and must be passed before the candidate is permitted to proceed with the thesis. Students who enroll in the School of Public Health with the intention of becoming doctoral candidates are expected to complete required courses and pass their qualifying examinations within three years, if not sooner, for full-time students, or four years for part-time students.

4. The advisory committee continues to supervise the student's research, including the preparation of his thesis.

5. After the advisory committee has approved the thesis, it should be typed in final form. Three unbound copies must be deposited in the Dean's office before January first, for degrees to be awarded at midyear, and before May first for degrees to be awarded in June. In some instances the thesis will be submitted to a reading

committee, if requested by the advisory committee or the Committee on Admissions and Degrees. Members of the reading committee may be selected from any faculty of the University and will be appointed by the Dean.

6. Each copy of the thesis must be accompanied by a summary not exceeding 1200 words in length, which shall indicate clearly the purposes, methods, and results of the investigation.

7. After the thesis is accepted, the student is given an oral examination by the faculty. The examination is conducted by the Admissions and Degrees Committee and covers the thesis as well as those public health subjects to which the thesis is related. Ordinarily this must be accomplished within five years after the qualifying examination is passed.

Master of Industrial Health

The course of training leading to the degree of Master of Industrial Health is designed to meet the increasing need for physicians qualified to plan, organize, and direct health programs for industry and labor.

Requirements for Admission

Candidates for this degree must be graduates of an acceptable school of medicine and must also satisfy the Committee on Admissions and Degrees as to their scholastic abilities and potentiality for profitable study at a graduate level. Students from the United States should have completed an internship of at least twelve months in a hospital approved by the American Medical Association.

Requirements for the Degree

1. One academic year must be spent in residence at the University.

2. The student must complete successfully the required and elective courses to a minimum total of 40 credit units. All candidates for the degree are expected to take the following courses unless they can demonstrate equivalent preparation:

Industrial Hygiene and Occupational Medicine

Basic Problems in Occupational Health and Industrial Environments (I.H. 1c,d)
Industrial Medical Clinics and Occupational Medicine (I.H. 3a, 3b, 3c,d)
Human Factors in Occupational Adjustment and Safety (I.H. 5c,d)
Industrial Air Analysis (I.H. 2a,b)

Environmental Hygiene

Environmental Physiology (Physiol. 2c)
Principles of Sanitation (San. Eng. 1b)
Radiological Hygiene (E.H. 2a,b)
Special Environmental Problems (E.H. 40c,d)
Toxicology of Air Contaminants (Physiol. 40d)

Public Health

Principles of Epidemiology (Epid. 1a)
Principles of Biostatistics (Bio. 1a,b)
Principles of Public Health Practice (P.H.P. 1b,c)

In addition, the student may select from the general curriculum courses of interest to him, or do special work subject to approval of the Heads of the Departments of Industrial Hygiene or Physiology.

3. No classes are scheduled during the two-week period from March 16 to 28, 1959. This time will be used for field or clinic assignments and for tutorial and laboratory work on special projects.

4. Upon completion of all course requirements the student must pass a comprehensive examination. This examination will be given only at the end of a semester.

Grading System

Effective with the academic year 1958–59, the grading system is as follows:

A and B are honor grades
C is acceptable
D is passing but of inferior quality
F is failing

Grade averages are computed on the basis of numerical equivalents, and according to the number of credit units in each course: A–1, B–2, C–3, D–5, F–8. The minimum level of performance acceptable for a Master of Public Health, Master of Science in Hygiene or Master of Industrial Health degree is a C average.

A student cannot qualify for a degree if he fails one or more required courses. However, if he fails only one required course, he may request a re-examination in that course. Re-examination will be given subject to approval of the instructor in the course and of the Committee on Admissions and Degrees, and will normally be given only after a period of additional study or course work, within a period of eight weeks following the initial failure.

There are a few courses in the School in which the student's work can be graded only as "Satisfactory" or "Unsatisfactory." Such grades will not be included in the computation of grade averages. Courses in which the student has obtained the grade of "Satisfactory" will contribute toward his total credit units. If work is marked "Unsatisfactory," no credit will be allowed.

A grade recorded as "Incomplete" will be changed to "F" if the course requirements are not satisfactorily fulfilled by the end of the next period or before the comprehensive examination, whichever comes first.

A student must have at least 40 units of course credits to be eligible for the comprehensive examination.

A passing grade for the comprehensive examination shall be at least C. If the student fails, he may request a re-examination. If the request is approved by the Committee on Admissions and Degrees, the re-examination may be taken within a period of one year.

Special Students

Subject to availability of space, the School may accept a few students, on a full-time or a part-time basis, who are not degree candidates, but who are interested in taking one or more courses in a special field. Procedures for the admission of such students are the same as for degree candidates. Special students who later wish to be admitted to degree candidacy will be considered on the same basis as other applicants for admission. Admission as a special student carries with it no commitment to accept the applicant as a degree candidate.

Two-month Program in Industrial Health

The Department of Industrial Hygiene offers an opportunity for a limited number of qualified industrial physicians and engineers to enroll as special students to take the courses in industrial hygiene, occupational medicine and related subjects. This is a full-time program given from January 26 to March 28, 1959 and includes most of the courses in the Department of Industrial Hygiene which are described on pages 53–56. The tuition fee for this two-month program is $300.

Degrees in Engineering

Graduates of engineering colleges or scientific schools of recognized standing who are interested in the sanitary engineering or industrial hygiene aspects of public health may be admitted to the Division of Engineering and Applied Physics of the Graduate School of Arts and Sciences as candidates for the degree of Master of Science, Master of Engineering or Doctor of Philosophy. They may elect appropriate courses in the School of Public Health as a part of the program for these degrees.

For further information write to the Committee on Admissions, Graduate School of Arts and Sciences, Farlow House, Cambridge 38, Massachusetts.

Program for Teachers of Preventive Medicine and Public Health

In medical schools throughout the world there is an increasing appreciation of the need for instruction in preventive medicine and public health. Departments are being established in many schools which have not previously included these subjects in their curricula. Furthermore, many countries are planning new schools to meet current and future needs for physicians and experts in public health. The problem of preparing staff members for these institutions has been of great concern to several international agencies; the Harvard School of Public Health has, with their support and counsel, begun a special program for students who have been selected to fill faculty positions in their own schools. The World Health Organization, the International Cooperation Administration, the International Health Division of the U. S. Public Health Service, the China Medical Board, and the New World Foundation have participated in developing the program at Harvard. The School has also had excellent cooperation from the departments of preventive medicine in several medical schools.

In general, it is important for a teacher of preventive medicine and public health to have a broad background in public health, to be thoroughly competent in one of the special fields usually included within a department of preventive medicine, or to have mastery of a technic which is not usually found among his clinical colleagues. The principal objectives of the program are, therefore, to provide these features by means of an integrated plan of study and to assist the student in increasing his skill in teaching, either at the School of Public Health or in a department of preventive medicine of one of the medical schools associated with the program. It is thought essential that each program be individually planned, not only because candidates vary in their special backgrounds and aptitudes but also because graduates of the program should vary in the skills which they take back to particular medical schools or countries of origin.

It is also desirable, but not essential, that the student be well oriented in clinical medicine. The schedule of course work in the

program provides time for attendance at some of the conferences in the Boston hospitals, and the student can keep in touch with current clinical developments in this way, but the School does not give academic credit for time spent in acquiring clinical experience. If a student desires further experience in clinical medicine, it is the responsibility of the student (and his sponsor) to arrange such training before enrollment in the program.

Content of the Program

Students in the program are expected to enroll in the regular courses leading to the Master of Public Health degree if they have not had previous graduate instruction in public health. If a student has recently obtained the Master of Public Health degree, he may concentrate on advanced work in one of the departments of the School as a candidate for the degree of Master of Science in Hygiene.

Some students may prefer to broaden their background by taking courses or participating in departmental research without attempting to qualify for an additional degree. If a student has sufficient time and is qualified to do original research, he may wish to be considered for one of the doctoral degree programs of the School.

During the first academic year, each student in the program is required to take the two courses which have been developed for this group: Public Health 42a,b,c,d Seminar in Preventive Medicine and Public Health, and Public Health 43d Seminar in Educational Methods. At the end of the third period (approximately April first) a schedule is drawn up for each student for the remainder of the time needed to complete his preparation in the program. The needs and desires of the student and the recommendations of his sponsor and his faculty advisor are considered by the Committee on Admissions and Degrees. Their recommendations are presented to the Administrative Board for approval. Several alternatives are available; the choice is dependent on the extent of the student's previous experience in teaching and research, and the quality of his academic work at the School. When a student has not had adequate experience in teaching, he may be assigned to spend a period of several weeks to a few months working with the staff of a depart-

ment of preventive medicine in one of the medical schools associated with the program. (This phase does not count toward academic credits in the Harvard School of Public Health.) For students who have had adequate teaching experience, the schedule provides opportunities in tutorial or research work at the School, under supervision of a member of the Faculty.

The duration of the program will depend upon the qualifications and progress of the student. The normal requirement is two years, unless the student becomes a doctoral candidate, in which case a longer time may be necessary.

When the student has finished satisfactorily his particular schedule as prepared by the Committee on Admissions and Degrees and as voted by the Administrative Board, he is eligible for the certificate of the Program for Teachers of Preventive Medicine and Public Health. In addition to this certificate, a student may also earn one or more of the regular degrees offered by the Faculty, by fulfilling the appropriate requirements as stated elsewhere in the catalogue.

Program in Aviation Medicine

In February of 1953 the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association authorized certification by the American Board of Preventive Medicine, Inc. of properly qualified specialists in aviation medicine. The Harvard School of Public Health has developed a program to meet the Board requirements of one year of graduate education in the basic sciences related to aviation medicine in a school of public health. This program has the approval of the Committee on Aviation Medical Training and Education of the Aero Medical Association. Those students wishing to obtain credit toward certification in the field of aviation medicine may enroll for the degree of Master of Public Health or Master of Industrial Health. The requirements for these degrees are outlined on pages 24 and 31. A series of seminars will be given during the academic year to meet the special interests of those concentrating in the field of aviation medicine, not only for representatives of the military services but

also for those who plan to enter the medical services of the aircraft manufacturing companies and civil airlines.

Program in Public Health Education

This program is offered by the School of Public Health with the cooperation of the Department of Social Relations (Faculty of Arts and Sciences) and the School of Education. The program as outlined is flexible and may be modified to suit the needs of the student. Classwork is supplemented by three months of supervised field training following the spring term.

Candidates may study for the degree of Master of Science in Hygiene. Work toward the degree of Doctor of Science in Hygiene is offered to exceptional students.

Health education is an area of public health in which there has been rapid development in recent years. Professional opportunities are numerous and varied and exist at local, state and national levels in both official and voluntary agencies.

The program of study includes the following courses:

Public Health and Health Education

(School of Public Health)

Required Courses:	*Credits*
Factors in Health and Disease (P.H.P. 40a,b)	2
Health Education Seminar (P.H.P. 5c,d)	2
Group Dynamics (P.H.P. 6c,d)	2
The Human Community (P.H. 1a)	2.5
Principles of Public Health Practice (P.H.P. 1b,c)	3
Organization and Administration of Health Agencies (P.H.P. 10c,d)	6
Biostatistics and Epidemiology (P.H. 40a,b,c)	7
Ecology and Epidemiology of Chronic and Non-infectious Disease (P.H. 41b,c)	3
Health and Illness in Cross-Cultural Perspective (P.H.P. 11c,d)	2
	29.5

Electives:

Courses in medical care, sanitation, mental health, public health history, control of chronic disease and cancer, nutrition and others, may be elected depending on individual interests and training.

Social Relations and Education

(Faculty of Arts and Sciences; School of Education)

A selection of courses from the following, which presuppose some knowledge of the social sciences and education, will vary with the student's background and needs.

Social Relations:	*Credits*
Cognitive Processes in Personality (Psych. 148)	5
Introduction to Anthropology (Anth. 1b)	5
Introduction to the Study of Small Groups (S.R. 121)	5
Opinion and Communication (S.R. 162)	5
Personality and the Social System (S.R. 153)	5
Psychology of Learning (Psych. 141)	5
Education:	
Introduction to Administrative Problems (C–17)	5
Introduction to Educational Psychology and Child Behavior (B–2)	5
Introduction to the Teaching of Science (C–10)	5

Field Work

Arrangements will be made with approved official and voluntary agencies for three months of supervised field work in community health education.

Section III
Content of Courses

CONTENT OF COURSES

INTERDEPARTMENTAL AND DIVISIONAL COURSES

Public Health Forums

Lectures. *Dates to be announced.* Members of the Faculty, and guest lecturers.

In order to afford an opportunity for the entire student body to meet with the Faculty and distinguished guest lecturers, forums are held at various times during the academic year. They are designed to bring the interests of several departments to bear on topics of general importance.

Public Health 1a. The Human Community

Lectures and seminars. *Mondays and Fridays, 11–1, Wednesdays, 10–11, first period.* Dr. PAUL, Dr. REED and associates.

Credit 2.5 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 13 credit units. Candidates for the degree of Master of Science in Hygiene may also elect this course.

Comprehension of health problems and implementation of health programs depend upon understanding the forms and forces active in community life. This course of instruction deals with demography, social and cultural characteristics of human populations, the organization and behavior of human communities, and their relationship to the environment. The objective of the course is to provide a knowledge of human populations, interpersonal relationships, and social organization in preparation for the study of public health.

Public Health 3d. History and Philosophy of Public Health

Seminars. *Mondays, 11–1, fourth period.* Dr. MAYER.

Credit 1 unit.

Students will be helped to gain a broad picture of the development of medical sciences, sanitary engineering and demography in Ancient Egypt, Greece and Alexandria, Rome, the Arab and European Middle Ages and during the Renaissance and the Modern Era. This will be followed by discussion of selected historical situations illustrating how available knowledge interacts with political structure, economic status and cultural attitudes to determine the goals of public health and the execution of programs.

Public Health 4c,d. Research Methods in Community Health

Lectures and discussions. *Tuesdays and Thursdays, 4–6, third period; Tuesdays and Thursdays, 9–11, fourth period.* Dr. REED, Dr. LEVINE and associates.

Credit 4 units.

This elective course, offered by members of the Biostatistics and Public Health Practice Departments, is intended primarily for doctoral candidates and other advanced students who require specialized preparation to conduct or administer scientific research on social and community aspects of health, health behavior and health organization. By means of lectures, discussions of current research projects, and presentations of students' own research plans, instruction will cover a range of methods and techniques including research design, survey methods, case and longitudinal studies, as well as relevant statistical techniques, methods of constructing and administering interviews, and other methods of data collection and analysis. Admission is limited and requires the consent of the instructors.

Public Health 40a,b,c. Biostatistics and Epidemiology

Lectures, discussions and laboratory. *Tuesdays and Thursdays, 11–1, Saturdays, 9–1, first period; Tuesdays, Thursdays and Saturdays, 11–1, second period; and Tuesdays, Thursdays and Saturdays, 9–11, third period.* Dr. Worcester, Dr. Bell and associates.

Credit 7 units.

Required of Master of Science in Hygiene candidates (except those eligible to take Biostatistics 1a,b and Epidemiology 1a).

Epidemiology and biostatistics are two disciplines essential to the investigation of problems of health and disease at a community level. This course is an attempt to provide integrated teaching in these two subjects to a small group of students without medical background. Initially, biostatistics, including demography, will be presented. Following this, a small number of diseases will be covered in detail to show the methods by which our present level of knowledge has been reached and to illustrate the principles of epidemiology. There will be laboratory exercises related to these diseases, as well as laboratory demonstrations. Classic, as well as current, literature in epidemiology will be assigned. Each student will present an assigned project within his field of interest.

Public Health 41b,c. Ecology and Epidemiology of Chronic and Non-Infectious Disease

Lectures and laboratory. *Mondays, 2–4, Thursdays, 9–10, second period; Mondays and Fridays, 9–11, third period.* Dr. Pugh, Dr. Reed and associates.

Credit 3 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 13 credit units. Candidates for the degree of Master of Science in Hygiene may also elect this course.

A course concerned with diseases and disabilities such as mental disorders, accidents, and metabolic, neoplastic and degenerative diseases. The problem

of establishing criteria for clinical definition is discussed, prognosis and influence of treatment are outlined and relevant ecologic studies are reviewed. In addition, particular attention is paid to the diverse effects on health which appear to be connected with patterns of human experience in such areas as parent-child relationship, dietary practice or social class.

Public Health 42a,b,c,d. Seminar in Preventive Medicine and Public Health

Seminars. *Tuesdays, 11–1, first and second periods*; time to be arranged, third and fourth periods, and individual tutorial work. Dr. TAYLOR.

Credit 1 unit in each period.

These seminars are designed for the students in the program for teachers of preventive medicine and public health. Consideration is given to the subject matter of public health and preventive medicine as they are developing in various parts of the world. Case presentations of the preventive aspects of health problems in individual patients, families and communities are discussed. Tutorial work focusses on improving teaching methods. Visiting specialists lead seminars on the prevention of specific diseases and on particular phases of teaching in preventive medicine and public health.

Public Health 43d. Educational Methods Seminar

Seminars. Two hours a week, time to be arranged, fourth quarter. Dr. TAYLOR, Dr. COGAN, and other faculty members from the Graduate School of Education.

Credit 1 unit.

These seminars are intended for the students in the program for teachers of preventive medicine and public health. Specific areas of interest in medical education are covered with detailed discussion of subjects such as the psychology of learning, communication, teaching for attitude change, the case method of teaching and the adapting of teaching methods to particular learning situations. An attempt is made to develop understanding of basic principles which can be applied under varied circumstances.

Environmental Hygiene 1c

Lectures and field trips. *Tuesdays, Thursdays and Saturdays, 11–1, third period.* Professor DRINKER, Dr. WHITTENBERGER and associates.

Credit 2.5 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 13 credit units.

This course is presented by members of the Industrial Hygiene and Physiology Departments. Physiologic responses evoked by the physical and chemical attributes of man's environment will be described and the limits of

such responses emphasized. Methods for assessing and controlling environmental stresses will be presented. Topics covered will include: temperature, humidity, barometric pressure, ionizing radiation, air pollution, toxicology, illumination, and noise.

This course is intended for Master of Public Health candidates who are not specializing in Industrial Hygiene or Occupational Medicine. It is also open to other students who have had Physiology 1a,b or its equivalent and who have had chemistry and physics at a college level.

Environmental Hygiene 2a,b, 2c,d. Radiological Hygiene

Lectures, laboratories and field trips. *Wednesdays, 2–5, first and second periods*; time to be arranged, third and fourth periods. Mr. Yoder and staff of the Division (Departments of Industrial Hygiene and Physiology).

Credit 3 units for each term.

The first term of the course, which may be taken separately, will present the essentials of atomic physics and radiation biology as an introduction to the evaluation of health hazards from ionizing radiation.

The second term of the course deals with more advanced radioactivity instrumentation and measurement; the bio-physics of radiation and hazards of internal emitters. Typical examples of bio-assays and radiation dosage measurement will be studied.

Environmental Hygiene 40c,d. Special Environmental Problems

Lectures, demonstrations and seminars. *Wednesdays, 11–1, third and fourth periods.* Staff of the Division.

Credit 2 units.

An advanced lecture and seminar course for students in industrial hygiene and environmental physiology. It will cover such topics as nuclear reactor safeguards, micro-meteorology and its relation to air pollution, aero-allergens, community air pollution, micro-wave hazards, noise measurement and appraisal, and the use of municipal incinerators.

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF BIOSTATISTICS

Hugo Muench, a.b., m.d., dr.p.h., a.m. (hon.), *Professor of Biostatistics* and *Head of the Department*

Jane Worcester, a.b., dr.p.h., *Associate Professor of Biostatistics*

Robert B. Reed, ph.d., *Associate Professor of Biostatistics*

Anthony F. Bartholomay, a.m., s.d. in hyg., *Assistant Professor of Mathematical Biology*

Margaret E. Drolette, a.b., m.p.h., *Associate in Biostatistics*

Paul M. Densen, a.b., s.d., *Visiting Lecturer on Biostatistics*

Marian G. Maloon, a.b., ed.m., *Instructor in Biostatistics*

Elizabeth G. Flanagan, s.b., *Research Associate in Biostatistics*

Mindel C. Sheps, m.d., m.p.h., *Assistant Professor of Preventive Medicine*

The teaching aims of the Department may be divided very generally into three categories:

First, it is essential for workers in all branches of public health to be able to draw justified conclusions from numerical data and to base logical action on these conclusions. This applies to the administrator who must evaluate problems and the results of his activities, as well as to the epidemiologist and the research worker who must apply statistical technics to their laboratory and field problems. The required course in Biostatistics is therefore designed to give a minimum command of simple statistical methodology to all students.

Second, it is essential for field and laboratory researchers to be able to use statistical methods in planning and analyzing their experiments and problems. Elective courses are designed to provide an introduction to methodology in this area. These courses are adapted to the needs of students of this School, many of whom have broad background in biological sciences while few have extensive preparation in mathematics. A minimum of mathematical exposition is therefore included in courses intended for students in these categories. Instead the emphasis is on understanding the statistical procedures and the ability to carry out indicated analyses effectively.

Third, there is a smaller group of students particularly interested in pursuing further work along mathematical lines. Their requirements are fulfilled, on the one hand, by the provision of advanced and seminar courses in the Department; on the other by the offerings of the newly established Department of Statistics in the Graduate School of Arts and Sciences.

Biostatistics 1a,b. Principles of Biostatistics

Lectures and discussions. *Tuesdays and Thursdays, 10–11, first period; Mondays, 11–12 and Wednesdays, 10–11, second period.*

Laboratory. *Mondays, 2–5, first period; Fridays, 2–5, second period.* Staff of the Department.

Credit 3.5 units.

Required of Master of Public Health candidates.

This course is designed for candidates with medical background or other similar thorough preparation in the biological sciences (for the introductory course for other candidates, see page 44). Lectures, discussions and laboratory exercises introduce the student to demographic concepts: the structure of the population and the use of the life table; the nature and composition of rates and their use from administrative and epidemiological points of view. The course forms an introduction to the theory of measurements and distributions, including the testing of significance of differences and the interaction of variables. Finally, the student is introduced to basic concepts of probability and association, sampling technics and construction of controlled experiments such as clinical trials.

Biostatistics 2c,d. Statistical Methodology

Lectures, discussions and laboratory. *Tuesdays and Thursdays, 2–5, third and fourth periods.* Dr. MUENCH, Dr. WORCESTER, Miss DROLETTE and staff.

Credit 4 units.

This course, a continuation of Biostatistics 1a,b, introduces the student to technical statistical procedures important in problems of laboratory and field research. Topics included are further considerations of probability and correlation together with an introduction to procedures used in the planning of experiments including variance analysis, non-parametric methods, dosage response and maximum likelihood. Statistical technics introduced in advanced courses in epidemiology will be amplified and supplemented.

Prerequisites: Basic preparation in statistics and epidemiology.

Biostatistics 15a,b,c,d. Departmental Seminar

Seminars. *Wednesdays, 11–1, all four periods.* Staff of the Department.

Credit 1 unit in each period.

This course is designed to afford opportunity for the discussion of statistical problems arising in the course of the work of students or staff in this or other Departments, or outside the School. Problems of interest to other Departments may be discussed at joint meetings of the specialty seminars concerned. Some sessions of the seminar may be devoted to current literature. Development of topics will follow chiefly the lines of interest of students and of staff members.

Biostatistics 17c,d. Tutorial Program

Time and credit to be arranged, third and fourth periods.

An opportunity for tutorial work at masters' level will be given interested students. This will involve not only work in statistical fields, but can include problems arising in the course of special programs in other departments. Schedules and credit may therefore be arranged jointly with such other departments.

Biostatistics 20. Research

Individual guided research at doctoral levels, for candidates for the Doctor of Public Health, Doctor of Science in Hygiene or other doctoral degrees. The work may be part of the program for a doctorate in this Department or may be integrated with doctoral research in others.

Biostatistics 40a,b. Mathematical Biology

Lectures and seminars. Two hours a week, time to be arranged, first and second periods. Dr. BARTHOLOMAY.

Credit 2 units.

Mathematical models of certain basic biological phenomena will be derived and studied and some new approaches to the more general problem of mathematical methodology in biology will be introduced. Particular emphasis will be placed on the kinetics of biological systems. Mathematical models which will be used include topics in differential equations, stochastic processes, and statistics.

Prerequisite: Consent of instructor.

Biostatistics 41d. Sequential Analysis

Lectures and seminars. Two hours a week, time to be arranged, fourth period. Dr. BARTHOLOMAY.

Credit 1 unit.

This course deals with a new approach to statistical inference, the distinguishing feature of which is that the number of observations required by such a procedure is not determined arbitrarily and in advance of the experiment. The decision to terminate an experiment depends at each stage on the results of observations previously made. Wald's Sequential Probability Ratio Tests will be introduced, as well as other types of sequential procedures. Recent applications to clinical experiments will also be discussed.

Prerequisite: Consent of instructor.

HARVARD UNIVERSITY

DEPARTMENT OF EPIDEMIOLOGY

Brian MacMahon, M.D., PH.D., D.P.H., S.M. IN HYG., *Professor of Epidemiology* and *Head of the Department*

John E. Gordon, S.B., PH.D., M.D., A.M. (hon.), F.R.C.P. (Lond.), *Professor of Preventive Medicine and Epidemiology, Emeritus*

A. Daniel Rubenstein, A.B., M.D., M.P.H., *Associate Clinical Professor of Epidemiology*

Thomas F. Pugh, M.D., M.P.H., *Assistant Professor of Epidemiology*

Carl E. Taylor, S.B., M.D., F.R.C.P. (Canada), DR.P.H., *Assistant Professor of Preventive Medicine and Epidemiology*

F. Randolf Philbrook, S.B., M.D., M.P.H., *Associate in Epidemiology*

Francis B. Carroll, D.M.D., M.D., M.P.H., *Visiting Lecturer on Epidemiology*

Conrad Wesselhoeft, M.D., *Visiting Lecturer on Infectious Diseases*

John C. Ayres, S.B., M.D., M.P.H., *Instructor in Epidemiology*

John B. Wyon, B.A., M.B.,B.CH., M.R.C.P., M.P.H., *Instructor in Epidemiology*

Nicholas J. Fiumara, A.B., M.D., M.P.H., *Instructor in Epidemiology*

Louis Weinstein, S.M., PH.D., M.D., *Lecturer on Infectious Diseases*

The program of the Department of Epidemiology has two main objectives. The first is to offer courses covering the broad field of epidemiology. These are designed primarily for the Master of Public Health curriculum. Thus, purposes, philosophy and methods are outlined in Epidemiology 1a; systematic reviews of the noncommunicable and communicable diseases are presented in Public Health 41b,c and Microbiology and Tropical Public Health 1a,b respectively, and Epidemiology 3c, 5d, 30c and 40d are elective courses for students with special interests. A special course for Master of Science in Hygiene candidates in which the department participates is described on page 44.

The second objective is to encourage original investigation in epidemiology. In the Master of Public Health curriculum, Epidemiology 15 provides an opportunity for experience in study design; facilities will also be provided to qualified students for direct participation in the research program of the department (Epidemiology 17). In the doctoral program (Epidemiology 20) research at a more advanced level and requiring considerable time investment will be expected.

A training program supported by the National Institutes of Health, U.S. Public Health Service, provides opportunities for training in epidemiology at a variety of levels (see page 96). In the selection of graduate candidates for

this program, preference will be given to those intending to proceed to investigative work at the doctoral level.

Epidemiology 1a. Principles of Epidemiology

Lectures, *Tuesdays and Thursdays, 9–10, Fridays, 2–3;* laboratory, *Fridays, 3–5, first period.* Dr. MacMahon and associates.

Credit 2.5 units.

Required of Master of Public Health candidates.

Introduction to the principles, purposes and methods of epidemiology. Illustration is by reference to certain classic epidemiologic investigations and through laboratory exercises.

Epidemiology 3c. Clinical Problems in Infectious Disease

Lectures. *Fridays, 12–1*; Clinics, *Fridays, 3:30–5, third period.* Dr. Wesselhoeft and Dr. Weinstein.

Credit 1 unit.

Problems of diagnosis, treatment and control of the common acute communicable diseases of temperate climates.

Epidemiology 5d. Epidemiologic Practice in Infectious Disease

Conferences, seminars, laboratory exercises. *Wednesdays and Fridays, 9–11, fourth period.* Dr. Rubenstein.

Credit 2 units.

A seminar course providing experience in solving epidemiologic problems drawn mainly from current practice in acute communicable disease.

Epidemiology 15a,b,c,d. Departmental Seminar

Seminars. *Wednesdays, 11–1, all four periods.* Staff of the Department.

Credit 1 unit in each period.

For students with a major interest in epidemiology. Participants will select an epidemiologic problem in apparent need of investigation, and will prepare and present for group discussion a summary of the present status of knowledge of the problem and the formal design of a study directed towards advancement of present knowledge.

Epidemiology 17c,d. Introduction to Research

Participation in departmental research in close association with one staff member. Time and credit by arrangement with the Head of the Department.

Prerequisite: Epidemiology 15.

Epidemiology 20. Research

With immediate faculty guidance, doctoral candidates will initiate and carry through to completion a substantial research study which may or may not be related to on-going department research activities.

Epidemiology 30c. Operational Epidemiology

Field visits, March 16–20, 1959, inclusive.

Credit 1 unit.

A week of planned visits to field and research activities in epidemiology in the New York area, including the Bureau of Preventable Diseases, Bureau of Laboratories, City of New York Department of Health, Public Health Research Institute, Lederle Laboratories, United Nations World Health Organization, Milbank Memorial Fund, American Public Health Association, and State University of New York Downstate Medical Center.

Epidemiology 40d. Heredity and Environment in the Etiology of Disease

Seminars and group discussions. *Mondays, 9–11, fourth period.* Dr. MacMahon and Dr. Pugh.

Credit 1 unit.

Presentation and discussion of studies illustrating the methods of distinguishing the influence of genetic and environmental factors in the etiology of disease, particularly disease of early life.

Prerequisite: Public Health 41b,c or equivalent background.

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF INDUSTRIAL HYGIENE

PHILIP DRINKER, S.B., CHEM.E., S.D. (hon.), LL.D., A.M. (hon.), *Professor of Industrial Hygiene* and *Head of the Department*

CONSTANTIN P. YAGLOU, B.A., S.B., M.M.E., A.M. (hon.), *Professor of Industrial Hygiene*

LESLIE SILVERMAN, S.D., *Professor of Engineering in Environmental Hygiene*

ROSS A. MCFARLAND, A.B., PH.D., S.D. (hon.), *Professor of Environmental Health and Safety*

CHARLES R. WILLIAMS, PH.D., *Associate Professor of Applied Industrial Hygiene*

RICHARD DENNIS, S.M., *Assistant Professor of Industrial Hygiene*

CHARLES E. BILLINGS, S.M., *Assistant Professor of Industrial Hygiene*

ALBERT DAMON, A.B., PH.D., M.D., *Assistant Professor of Medical Anthropology*

JOSEPH J. FITZGERALD, S.M., *Assistant Professor of Physics in Environmental Hygiene*

ROBERT G. GALLAGHAR, A.B., *Lecturer on Radiological Health*

MELVIN N. NEWQUIST, A.B., S.B., M.D., *Visiting Lecturer on Industrial Hygiene*

ALLEN D. BRANDT, S.D., *Visiting Lecturer on Industrial Hygiene Engineering*

WILLIAM B. HARRIS, CHEM.E., S.M., *Visiting Lecturer on Industrial Hygiene Engineering*

NATHAN VAN HENDRICKS, S.B., CHEM.E., *Visiting Lecturer on Industrial Hygiene Engineering*

LAWRENCE S. COOKE, *Visiting Lecturer on Industrial Hygiene*

ROBERT L. QUIMBY, A.B., M.D.,C.M., *Visiting Lecturer on Industrial Medicine*

HARRY J. WHITE, S.B., PH.D., *Visiting Lecturer on Industrial Hygiene Engineering*

JAMES M. AUSTIN, A.M., S.D., *Visiting Lecturer on Meteorology and Air Pollution*

ROLF ELIASSEN, S.D., *Visiting Lecturer on Industrial Hygiene Engineering*

EMMA S. TOUSANT, LL.B., *Instructor in Industrial Hygiene*

ROBERT E. YODER, S.B., *Instructor in Radiological Health*

ROLAND C. MOORE, PH.D., *Research Associate in Industrial Hygiene*

EDWARD KRISTAL, S.B., *Research Associate in Industrial Hygiene Engineering*

RICHARD G. DOMEY, S.B., ED.D., *Research Associate in Industrial Hygiene*

LESTER H. LEVENBAUM, S.B., S.M., *Research Associate in Industrial Hygiene Engineering*

WILLIAM A. BURGESS, S.M., *Assistant in Industrial Hygiene Engineering*

Felix Stein, s.b., *Assistant in Industrial Hygiene Engineering*

Howard W. Stoudt, Jr., a.b., a.m., *Research Fellow in Biotechnology*

Harriet L. Hardy, a.b., m.d., *Associate Clinical Professor of Preventive Medicine*

Albert O. Seeler, a.b., m.d., *Clinical Associate in Medicine*

Industrial Hygiene 1c,d. Basic Problems in Occupational Health and Industrial Environments

Lectures and Field Trips. *Mondays and Fridays, 2–4, Wednesdays, 1:30–5, third period; Mondays, Wednesdays and Fridays, 2–4, fourth period.* Professor Drinker, Professor Yaglou, Dr. Silverman and Dr. Seeler.

Credit 3 units in each period. First half may be taken independently.

A course of lectures, demonstrations and inspections showing the relation of working conditions to health with special reference to control of industrial hazards, and of adverse conditions of temperature and humidity, the prevention of industrial disability and diseases, and workmen's compensation. (This course is classified as Eng. 282)

During a part of the fourth period (d) physicians and engineers will meet in separate sessions. The engineers' sessions will deal with industrial ventilation whereas the physicians will be concerned with special problems in occupational disease.

Industrial Hygiene 2a,b and 2c,d. Industrial Air Analysis

Laboratory work. *Tuesdays and Thursdays, 2–5, all four periods.* Dr. Silverman and Dr. Williams.

Credit 4 units in each term.

Determination and interpretation of adverse conditions found in work places of all types, such as factories and mills, and in assembly halls; methods employed in determining physical properties of the air, such as temperature, humidity, and air motion; atmospheric impurities and normal constituents of the air — gases, dusts, bacteria, and pollens; efficiencies of protective devices — masks, respirators, mechanical dust-collecting apparatus, hoods, and exhausters; efficiencies of air-conditioning equipment.

Course 2a,b (Eng. 281a) is intended for public health engineers and physisians enrolled in the Industrial Health program. Course 2c,d (Eng. 281b) is a continuation, primarily for students in industrial hygiene.

Industrial Hygiene 3a, 3b, 3c,d. Occupational Medicine

Lectures and clinics. Time and credit to be arranged. Dr. Ferris, Dr. Seeler and Dr. Hardy.

Occupational medical clinics at teaching hospitals and visits to medical clinics of various industries will be offered in all four periods.

3c,d will consist of a series of lectures and plant visits covering organization of occupational medical departments, physical examinations, disability evaluation, adequacy of various physiological functions, rehabilitation, plant records, industrial nurses' functions, surgical problems, diagnosis and treatment of occupational diseases with case studies and seminar discussions.

Medical clinics, which may be taken independently of the lecture series, will be limited to physicians.

Industrial Hygiene 4a,b,c,d. Aviation Health and Safety

Seminars. *Thursdays, 11–1, first and second periods*; time to be arranged, third and fourth periods. Dr. McFARLAND.

Credit 1 unit each period.

The purpose of these seminars is to integrate the work in the basic courses of public health and preventive medicine with the specialized problems of aviation health and safety. A series of round table discussions is arranged throughout the year, led by the students, the instructor, and various biological and medical specialists in the University.

Admission is by permission of the instructor.

Industrial Hygiene 5c,d. Human Factors in Occupational Adjustment and Safety

Lectures and demonstrations. *Fridays, 11–1, third and fourth periods.* Dr. McFARLAND.

Credit 2 units.

This course is concerned with the technics of experimental psychology, anthropology and biotechnology as applied to problems of occupational health and safety. Matching of mental and physical abilities to job requirements and the importance of designing equipment in terms of human capacities and limitation is discussed. Occupational implication of fatigue, environmental stresses, aging and the psycho-social environment are included along with the control of accidents by epidemiological analysis.

Industrial Hygiene 6a,b (Engineering 280). Heating and Air Conditioning

Lectures. *Mondays, Wednesdays and Fridays, 8–9, fall term,* at Pierce Hall, Cambridge. Professor YAGLOU.

Credit 3 units.

Selected topics in heating and air conditioning of interest to students in mechanical and sanitary engineering and industrial hygiene. Primarily for engineers and physical science majors.

Industrial Hygiene 7c,d (Engineering 286). Aerosol Technology

Lectures and laboratory work, at the School of Public Health. Time to be arranged. Assistant Professor BILLINGS.

Credit 4 units.

A general discussion of aerosol properties and their behavior. An advanced course for engineers interested in air pollution evaluation and control.

Prerequisite: Industrial Hygiene 2c,d, which may be taken concurrently.

Industrial Hygiene 20. Research

A limited number of qualified students will be given an opportunity to do research work in problems of industrial health including occupational disease, toxicology, air cleaning, heating, ventilating, and air conditioning, by arrangement with the Head of the Department.

DEPARTMENT OF MATERNAL AND CHILD HEALTH

MARTHA M. ELIOT, A.B., M.D., L.H.D., S.D. (hon.), LL.D., *Professor of Maternal and Child Health* and *Head of the Department*

HAROLD C. STUART, LITT.B., M.D., A.M (hon.), *Professor of Maternal and Child Health, Emeritus*

BERTHA S. BURKE, A.M., *Associate Professor of Maternal and Child Nutrition*

ELIZABETH P. RICE, A.B., S.M., *Associate Professor of Public Health Social Work*

WILLIAM M. SCHMIDT, M.D., *Associate Professor of Maternal and Child Health*

SAMUEL B. KIRKWOOD, A.B., M.D., *Clinical Professor of Maternal Health*

PAULINE G. STITT, M.D., M.P.H., *Assistant Professor of Maternal and Child Health*

RUTH G. CUMINGS, S.B., A.M., *Assistant Professor of Maternal and Child Health Nursing*

LEON STERNFELD, S.B., M.D., PH.D., M.P.H., *Assistant Clinical Professor of Maternal and Child Health* and *Health Officer of Cambridge*

ISABELLE VALADIAN, M.D., M.P.H., *Associate in Child Health*

LEONA BAUMGARTNER, PH.D., M.D., S.D. (hon.), *Visiting Lecturer on Maternal and Child Health*

HAROLD JACOBZINER, S.B., M.D., M.P.H., *Visiting Lecturer on Maternal and Child Health*

ELLA LANGER, M.D., *Visiting Lecturer on Maternal and Child Health*

ARTHUR J. LESSER, A.B., M.D., M.P.H., *Visiting Lecturer on Maternal and Child Health*

Harvey L. Shapiro, ed.b., a.m., m.p.h., *Visiting Lecturer on Maternal and Child Health*

Maurice M. Osborne, Jr., m.d., *Instructor in Child Health*

Carlotta Wettach, a.b., a.m., *Instructor in Public Health Social Work*

Veikko O. Hurme, d.m.d., *Research Associate in Child Health*

Anna S. van den Berg, b.sc., s.m. in hyg., *Research Associate in Child Nutrition*

Florence E. Cyr, a.b., s.m. in s.s., *Assistant in Social Work*

Charles A. Janeway, a.b., m.d., *Thomas Morgan Rotch Professor of Pediatrics*

William T. Green, a.m., m.d., *Clinical Professor of Orthopedic Surgery*

Clement A. Smith, a.m., m.d., *Associate Professor of Pediatrics at the Boston Lying-in Hospital*

J. Roswell Gallagher, a.b., m.d., *Lecturer on Pediatrics*

Randolph K. Byers, m.d., *Assistant Clinical Professor of Pediatrics*

Ralph A. Ross, a.m., m.d., *Assistant Clinical Professor of Pediatrics*

Robert J. Haggerty, a.b., m.d., *Associate in Pediatrics*

Lendon Snedeker, a.b., m.d., m.p.h., *Instructor in Pediatrics*

The public health activities and measures which contribute to successful maternal and child health programs are based upon scientific knowledge of the mother and child and of medical, social, emotional and cultural conditions during maternity and childhood, including knowledge of the care and rehabilitation of sick and handicapped children, and of other children with special needs.

Maternal and Child Health 1a may be elected by any student.

Maternal and Child Health 15 and 17 are intended for students majoring in the Department, but either or both may be elected by other Master of Public Health or Master of Science in Hygiene candidates with the consent of the Head of the Department. The elective courses 2c,d, 3d and 4ob are designed primarily for major students, but may also be elected by others with the consent of the instructor.

Programs of study will be adapted to student's individual interests, including Maternal and Child Health course and project work and related work in other departments.

Maternal and Child Health 1a. Principles Basic to the Practice of Maternal and Child Health

Lectures. *Mondays and Fridays, 9–11, Wednesdays, 9–10, first period.* Dr. Eliot and associates.

Credit 2.5 units.

CH 9-11

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 13 credit units. Candidates for the degree of Master of Science in Hygiene may also elect this course.

The principal physical, social and emotional characteristics, and needs of mothers and children, the development of children, and the factors promoting or interfering with such development in relation to the maternity period, infancy and children of preschool and school age; the principles of planning and operating maternal and child health programs to provide services essential to normal development; basic agency policies, establishment and maintenance of standards, and preparation and use of state and local plans and budgets; criteria and methods for evaluation of maternal and child health programs, sources of information on children, and activities of professional and nonprofessional groups concerning children.

Maternal and Child Health 2c,d. Research Approach to Growth, Development and Health of the Child

Seminars. Two hours a week, time to be arranged, third and fourth periods. Dr. VALADIAN, Dr. REED and associates.

Credit 2 units.

This course will utilize case studies from the Longitudinal Study of Child Health and Development conducted in this Department since 1930 by Dr. Harold C. Stuart, Professor Emeritus, to reveal the range of individual differences and varieties of patterns of progress.

Methods for obtaining data in the various fields of child study will be considered, as well as the evaluation of these data and the construction of norms. The problems involved in the study of interrelationships between various aspects of progress and between the child and his background and environment will receive particular attention.

This course will be designed to provide understanding of the problems involved in the evaluation and comparison of different populations of children and setting up studies of growth and development in different areas.

This course will not present elementary knowledge of growth and development, as covered in the basic Maternal and Child Health courses. Therefore, those choosing it must have had such courses or evidence of experience with and knowledge of the growth and development of children.

Maternal and Child Health 3d. Advances in Maternity Care

Seminars. Two hours a week, time to be arranged, fourth period. Dr. KIRKWOOD.

Credit 1 unit.

This course consists of informal discussions, demonstrations, and ward rounds. It stresses the means of assuring the application in practice of mater-

nity care of a high standard, embodying recent advances in knowledge as they relate to the administration of maternal and child health programs.

Maternal and Child Health 15a,b,c,d

Advanced seminar. *Wednesdays, 11–1, first and second periods; Wednesdays and Fridays, 11–1, Mondays, 4–5:30, third and fourth periods.* Dr. Eliot and associates.

Credit 6 units.

Presentation and discussion of problems based on field study, library investigation and tutorial work. Examples of problems, some of which will be presented by students, are health supervision and medical care for infants and children, services for children with motor or sensory handicaps, mental retardation, emotional disturbances, prematurity, and perinatal mortality.

Administrative aspects of maternal and child health and crippled children's programs which are assisted by federal grants-in-aid to states, and the programs of other agencies will be considered.

A sequence of lecture and discussion sessions on personality development will be given by Dr. Mason, and social problems and available social services for children will be given by Miss Rice as part of the course but may, with the consent of the instructor, be elected separately.

Field study in conjunction with this course is in two parts. See Maternal and Child Health 17 and 30.

Maternal and Child Health 17c,d. Special Projects

Time and credit to be arranged, third and fourth periods.

Students majoring in Maternal and Child Health will devote time to be arranged in the spring term to work under instructor's guidance on a special project. Each program will be arranged in conference between the student and instructor during the fall term, and approved in advance by the Head of the Department. In general, such programs will include a review of the literature, field study, and a paper reporting on the work done.

Opportunity is provided to study the flow of services of the various agencies concerned with a specific problem by means of step-by-step follow through using case records as primary source material.

Maternal and Child Health 20. Research

This work is designed specifically for students registering for doctoral degrees in Maternal and Child Health. It provides the opportunity for individual research required as a basis for the doctoral thesis. The work would be under the supervision of the Advisory Committee appointed to supervise the research and preparation of the candidate's thesis.

Maternal and Child Health 30c

Field Study, March 16–28, 1959.

Credit 2 units.

Assignments to agencies carrying out maternal and child health programs. The last two weeks of the third period permit a planned period of study of the day-to-day operation of maternal and child health, crippled children's and other related services of selected official and voluntary agencies. In general, each student will study a single agency during the two-week period, and will prepare a written report. The field studies are under the tutorial guidance of the Department, with the cooperation of staff members of public health, social and other community agencies.

Maternal and Child Health 40b. Nursing Services

Seminars. *Wednesdays, 2–4, second period.* Mrs. CUMINGS.

Credit 1 unit.

This seminar on maternal and child health nursing services is planned for students from the several professional groups in public health. The principal subjects are the nurse's role and functions in relation to planning, organizing, financing and evaluating nursing services in maternal and child health programs; the interrelationships of the multiprofessional team for maximum service, the priorities in public health nursing service devoted to maternal and child health; the possibilities of study and investigation to which the nurse might be a contributing member; the trends in both public health nursing and maternal and child health that will have an influence on future programs.

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF MICROBIOLOGY

JOHN C. SNYDER, A.B., M.D., *Professor of Microbiology* and *Head of the Department*

EDWARD S. MURRAY, A.B., M.D., M.P.H., *Associate Professor of Microbiology* and *Assistant Physician to University Health Services*

JOHANNES IPSEN, C.A., C.M., DR.MED., M.P.H., *Associate Professor of Public Health* and *Superintendent of the Institute of Laboratories, Massachusetts Department of Public Health*

ROBERT S. CHANG, S.B., M.D., S.D. IN HYG., *Assistant Professor of Microbiology*

SAMUEL D. BELL, JR., A.B., M.D., M.P.H., *Assistant Professor of Microbiology*

ROBERT A. MACCREADY, S.B., M.D., *Associate in Microbiology* and *Director of Diagnostic Laboratories, Department of Public Health of Massachusetts*

JAMES A. MCCOMB, D.V.M., *Associate in Public Health Immunology* and *Director of Biologic Laboratories, Department of Public Health of Massachusetts*

ROBERT B. PENNELL, S.M., PH.D., *Lecturer on Immunology*

HERALD R. COX, A.B., S.D. (hon.), *Visiting Lecturer on Microbiology*

GEOFFREY EDSALL, M.D., *Visiting Lecturer on Microbiology*

RICHARD H. DAGGY, S.M., PH.D., DR.P.H., *Visiting Lecturer on Entomology*

ROBERT J. HUEBNER, M.D., *Visiting Lecturer on Microbiology*

JOHN M. NEWELL, A.B., S.D., *Instructor in Public Health Immunology*

CATHARINE ATWOOD, A.B., *Instructor in Public Health Bacteriology*

AZMI T. HANNA, M.B.,CH.B., M.P.H., *Research Associate in Microbiology* (Absent 1958–59)

NADIM A. HADDAD, B.A., M.D., *Research Associate in Microbiology* (Absent 1958–59)

ROGER L. NICHOLS, A.B., M.D., *Research Associate in Microbiology* (Absent 1958–59)

DOROTHY E. MCCOMB, S.B., *Assistant in Microbiology*

JANE M. DRISCOLL, S.B., *Assistant in Microbiology*

JOHN W. VINSON, S.B., S.D. IN HYG., *Research Fellow in Microbiology*

The Department of Microbiology is concerned with the bacteria, rickettsiae, and viruses which cause the principal communicable diseases of public health importance. The staff members have many interests in common with the Departments of Epidemiology and Tropical Public Health. The courses in microbiology are intended primarily for students with a background in the medical and biological sciences.

The basic course, Microbiology — Tropical Public Health 1a,b, is designed to provide the students in the Master of Public Health program with the factual information and the principles of microbiology and parasitology which are essential to a general understanding of the field of public health.

The advanced courses of the department are planned for students whose major interests lie in some aspect of the communicable diseases. The titles and descriptions as listed below indicate the scope of the instruction offered by the department.

Students who are interested in learning research technics and in undertaking original investigation may register for Microbiology 17 during their first year, or Microbiology 20 after they have acquired technical skill in handling pathogenic microorganisms. These two courses provide the opportunity to work in close association with a member of the staff on a current research problem. Present departmental interests include the rickettsiae and certain viruses; the biological aspects of host-parasite relations, and the properties of human cells in tissue culture; and immunological problems, including statistical and field assay technics. Entomological problems of certain types are also within the scope of the research interests and facilities of the department.

Microbiology and Tropical Public Health 1a,b. Ecology and Epidemiology of Infectious Diseases

Lectures, seminars, conferences and laboratory exercises. *Tuesdays and Thursdays, 2–5, first and second periods; Saturdays, 10–12, first period, 11–1, second period.* Dr. SNYDER, Dr. WELLER and the Staff of the two Departments.

Credit 6 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 13 credit units.

In 1958–59 this course will be developed under the general direction of Drs. Snyder and Weller, with the collaboration of the staff of the Departments of Microbiology, Tropical Public Health and Epidemiology. The purpose of the course is to provide students in the Master of Public Health program with the basic knowledge of the communicable and infectious diseases, including the relevant ecologic factors which pertain directly to their prevention and control.

Microbiology and Tropical Public Health 1a,b is designed for students who have had most of the courses given in the first two years of medical school or their equivalent. The plan of the course includes several features which are new to the curriculum of the School: The introductory exercises provide an analysis of the present status of infectious diseases in tropical and temperate climates and the technics available for study of microorganisms and parasites, with special reference to recent methods which have opened a

new era in microbiology. The course then considers the principal diseases of public health importance beginning with arthropod-borne diseases and infections primarily involving the intestinal tract. In each category the subjects are presented by etiologic agent, including protozoa, helminths, viruses, rickettsiae, spirochetes and bacteria.

Approximately two-thirds of the time will be devoted to lectures and one-third to conferences, seminar discussions, and laboratory exercises. In the laboratory the student is expected to acquire an understanding of the potentialities as well as the limitations of pertinent public health laboratory procedures.

Microbiology 2d. Current Research in Microbiology

Tuesdays, 11–1, fourth period. Dr. SNYDER.

Credit 1 unit.

This course is arranged for the students who are concentrating in microbiology, epidemiology or tropical public health. Important papers from current periodicals on topics of general interest are assigned to the students for presentation. These papers are reviewed critically in respect to evaluation of the experimental work, analysis of the results, organization of the manuscripts, and clarity of presentation.

The purpose of the course is to develop the ability of the students to read the literature analytically and to plan their own work and manuscripts effectively.

Prerequisite: Microbiology — Tropical Public Health 1a,b or equivalent instruction.

Microbiology 11c. Public Health Laboratory Procedures

Lectures, seminars, and laboratory exercises. *Mondays and Fridays, 2–5, Wednesdays, 2–3, third period.* Dr. MURRAY, Dr. CHANG, Dr. BELL and Dr. MACCREADY.

Credit 2 units.

This course provides the opportunity to become familiar with the technics in use by public health laboratories for the diagnosis of the common bacterial and viral diseases. Some of the exercises are devoted to methods recently developed for the study of various microorganisms. The exercises are designed for orientation of the epidemiologist as well as the microbiologist, with particular reference to the potentialities and limitations of laboratory technics in the conduct of field investigations of communicable diseases.

Short exercises illustrate the important principles of tests in serology and bacteriology, and the students themselves inoculate embryonated eggs and animals by various routes, prepare diagnostic antigens, and perform neutralization tests and red cell agglutination tests.

Limited to fourteen students who have completed Microbiology — Tropical Public Health 1a,b.

Microbiology 12c. Biological Products in Public Health

Seminars and laboratory demonstrations at the Institute of Laboratories of the Massachusetts Department of Public Health. Time to be arranged, third period. Dr. Ipsen, Dr. McComb and Dr. Newell.

Credit 1 unit.

In this course, technics for production of biological products used in public health are demonstrated. Seminar discussions deal with the practical importance of biologics in control of communicable disease and their appropriate uses.

Opportunities are offered properly qualified students for original work at the Institute in problems of Public Health Immunology with credit for Microbiology 17 or 20 to be arranged with the Head of the Department.

Microbiology 13d. Rickettsial and Viral Diseases of Public Health Importance

Lectures, laboratory exercises, and seminars. *Mondays and Fridays, 2–5, fourth period,* and four hours per week individual laboratory work. Dr. Chang, Dr. Bell and Dr. Murray.

Credit 3 units.

The purpose of this course is to teach the basic principles and technics for laboratory study of certain rickettsiae and viruses which are of interest to public health workers. The course consists of lectures, seminars, supervised individual work, and laboratory exercises. The latter include methods for identification of representative species of rickettsiae and viruses of public health importance by the use of tissue culture, animal inoculation, and serologic technics.

The arthropods which are vectors or reservoirs of the major viral and rickettsial diseases are briefly considered at appropriate points in the exercises.

The course is planned as a basic preparation for those who will be involved in original research on rickettsiae or viruses either in the laboratory or the field.

Limited to ten students who have completed Microbiology 11c or who have had equivalent previous preparation.

Microbiology 15a,b,c,d. Seminars in Microbiology

Seminars. *Wednesdays, 11–1, all four periods.*

Credit 1 unit in each period.

Seminars on topics of special interest in microbiology. These vary from presentations by students of subjects assigned for analysis and review to

reports by staff members and advanced students of research work in progress in the department.

This course is required for students majoring in microbiology.

Microbiology 17a,b,c,d. Introduction to Laboratory Research

Laboratory exercises. Time and credit to be arranged with the Department Staff.

Candidates for the Master of Public Health or Master of Science in Hygiene degrees, or full-time special students, may register for advanced laboratory work under supervision by a member of the Department.

Microbiology 20. Research

Doctoral candidates or full-time special students who have completed the advanced courses in microbiology in the Department may undertake original investigation by arrangement with the Head of the Department.

DEPARTMENT OF NUTRITION

Fredrick J. Stare, s.m., ph.d., m.d., a.m. (hon.), *Professor of Nutrition* and *Head of the Department*

David M. Hegsted, s.m., ph.d., *Associate Professor of Nutrition*

Robert P. Geyer, s.m., ph.d., *Associate Professor of Nutrition*

Jean Mayer, b.a., ph.d., d.sc., *Associate Professor of Nutrition*

Martha F. Trulson, s.b., m.p.h., s.d. in hyg., *Associate Professor of Nutrition*

Stephen B. Andrus, s.b., m.d., *Assistant Professor of Pathology*

Stanley N. Gershoff, a.b., s.m., ph.d., *Assistant Professor of Nutrition*

Oscar W. Portman, s.b., m.d., *Assistant Professor of Nutrition*

Joseph J. Vitale, s.m., s.d. in hyg., *Assistant Professor of Nutrition*

Mary Q. Bolliger, a.b., s.m., ph.d., *Associate in Nutrition*

Maria Banasiewicz-Rodriguez, m.d., m.p.h., *Associate in Nutrition*

Louis C. Fillios, a.b., s.d. in hyg., *Associate in Nutrition*

Theodore B. Van Itallie, s.b., m.d., *Visiting Lecturer on Nutrition*

Elizabeth K. Caso, s.m., *Instructor in Nutrition*

Madge L. Myers, a.b., s.m., *Instructor in Nutrition*

Mary B. McCann, s.b., m.p.h., *Instructor in Nutrition*

Penelope S. Peckos, s.b., *Instructor in Nutrition*

F. Russell Olsen, a.b., *Research Associate in Nutrition*

Carlos Collazos, m.d., m.p.h., *Research Associate in Nutrition* (Absent 1958–59)

Leonardo Sinisterra, m.d., s.m. in hyg., *Research Associate in Nutrition* (Absent 1958–59)

Bernard Lown, s.b., m.d., *Research Associate in Medicine*

Robert E. Clancy, m.d., *Research Associate in Medicine*

Oscar M. Jankelson, m.d., *Research Associate in Medicine*

Ethel J. Bowie, s.b., *Assistant in Nutrition*

Patricia A. Stefanik, s.m., *Assistant in Nutrition*

Jean M. Hoegger, s.b., *Assistant in Nutrition*

Dorothy Bruno, s.b., *Assistant in Nutrition*

Marjorie G. Whiting, s.b., a.m., m.p.h., *Research Fellow in Nutrition*

Jean P. Christophe, m.d., m.sc., *Research Fellow in Nutrition*

Chikayuki Naito, m.d., d.m.sc., *Research Fellow in Nutrition*

Takuya Hayashida, m.agr., *Research Fellow in Nutrition*

Agnes L. Mayer, s.b., *Research Fellow in Nutrition*

A. Baird Hastings, s.b., ph.d., s.d. (hon.), *Hamilton Kuhn Professor of Biological Chemistry*

James H. Shaw, s.m., ph.d., *Associate Professor of Biological Chemistry in the School of Dental Medicine*

Ira Gore, a.b., m.d., *Assistant Clinical Professor of Pathology*

William R. Waddell, s.b., m.d., *Clinical Associate in Surgery*

Norman Zamcheck, a.b., m.d., *Clinical Associate in Medicine*

Earl E. Hellerstein, m.d., *Associate in Pathology*

Daniel S. Bernstein, m.d., *Instructor in Medicine*

James E. Anliker, s.m., ph.d., *Research Associate in Anaesthesia*

Nutrition 1b,c. Public Health Nutrition

Lectures. *Mondays, 12–1, Fridays, 11–1, second period; Mondays, 11–1, third period.* Dr. Stare and Staff of the Department.

Credit 2.5 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 13 credit units. Candidates for the degree of Master of Science in Hygiene may also elect this course.

This course deals with the science of nutrition and its application to problems of human nutrition. Approximately one half of the lectures are devoted to basic and clinical nutrition. Dietary requirements are considered in rela-

tion to growth, development, pregnancy, lactation and disease states. Methods for establishing and meeting nutrition requirements, especially in countries with unfavorable economic conditions, are discussed. The etiology, treatment and prevention of diseases related to nutritional factors are considered. Content also includes nutrition surveys and their evaluation, the place of the nutritionist in the public health program, and the nutritional problems of relief, rehabilitation, famine and other emergencies. The relation of production, distribution and preparation for the best use of foods is discussed, as are the problems of food enrichment, fortification and faddism.

Seminar sessions are arranged for small groups. Active student participation is expected.

Nutrition 2a,b, 2c,d. Nutrition Seminar

Seminars. *Wednesdays, 11–1, all four periods.* Dr. GERSHOFF and Staff of the Department.

Credit 1 unit in each term.

Brief discussions of classical and current literature in fundamental and applied nutrition. Admission limited and subject to the approval of the instructor.

Nutrition 3c. Biochemistry and Physiology of Nutrition

Lectures and discussions. *Fridays, 11–1, third period.* Dr. HEGSTED, Dr. MAYER and Dr. GERSHOFF.

Credit 1 unit.

The chemistry, function and metabolism of carbohydrates, fats, proteins, vitamins and essential minerals are considered in detail. The course is planned for those specializing in nutrition who have adequate training in biochemistry and physiology.

Prerequisites: Organic and biological chemistry, physiology and consent of instructors.

Nutrition 4c,d. Laboratory Technics

Lectures and demonstrations. *Wednesdays, 3–5, third and fourth periods.* Dr. GEYER.

Credit 2 units. Additional credits can be arranged for those desiring extra laboratory instruction.

This course is a survey of methods pertinent to laboratory research. The material covered includes biophysical and chemical technics. Students participate in the preparation and presentation of such general topics as chromatography, spectroscopy, microbiological assay, manometric measurements, and

purified diet technics. They are then instructed in the actual laboratory procedure pertaining to these technics.

Prerequisites: A basic course in biochemistry and consent of instructor.

Nutrition 5d. Dietary Evaluation

Lectures and laboratory exercises. Two hours a week, time to be arranged, fourth period. Dr. TRULSON.

Credit 1 unit.

Methods for obtaining a diet history are discussed and illustrated. The origins, accuracy, and use of food composition tables are considered and their use in translation of the diet history into equivalent food values is illustrated. The principles of nutritional surveys and studies for public health programs and clinical researches are discussed. Laboratory work will consist of practical exercises in evaluating diets and surveys.

Nutrition 6d. Clinical and Pathologic Aspects of Nutritional Disease

Lectures, demonstrations and seminars. *Tuesdays, 11–1, fourth period.* Staff of the Department.

Credit 1 unit.

This course is concerned with the clinical aspects and pathology of various diseases as they relate particularly to improper nutrition. Arrangements can be made for members of the class who are interested to visit various Boston hospitals to study illustrative clinical problems at the bedside.

Nutrition 17a,b,c,d. Individual Study

Time and credit to be arranged.

Individual work, under direction, may be arranged for students at the masters' level. This may include laboratory studies or projects in applied nutrition.

Nutrition 20. Research

Time and credit to be arranged.

Facilities are available for students at the doctoral level to do advanced work in nutrition along the lines of fundamental research or applied nutrition in public health and medicine.

Admission limited and subject to approval of the instructor.

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF PHYSIOLOGY

James L. Whittenberger, s.b., m.d., *James Stevens Simmons Professor of Public Health, Professor of Physiology* and *Head of the Department*

Jere Mead, s.b., m.d., *Associate Professor of Physiology*

Benjamin G. Ferris, Jr., a.b., m.d., *Associate Professor of Environmental Health and Safety*

Edward P. Radford, Jr., m.d., *Associate Professor of Physiology* (from December 1, 1958)

William H. Forbes, dr.phil., m.d., *Lecturer on Physiology*

Mary O. Amdur, s.b., ph.d., *Assistant Professor of Physiology*

Harben J. Boutourline-Young, m.b.,b.s., m.d., *Assistant Professor of Physiology* (Absent 1958–59)

N. Robert Frank, a.b., m.d., *Associate in Physiology*

Willem S. Frederik, m.d., ph.d., s.m. in hyg., *Lecturer on Physiology*

David B. Dill, s.b., ph.d., *Visiting Lecturer on Physiology*

Austin F. Henschel, s.b., ph.d., *Visiting Lecturer on Physiology*

Stanley J. Sarnoff, a.b., m.d., *Visiting Lecturer on Physiology*

Gordon N. French, a.b., m.d., *Research Associate in Physiology*

Robert G. Monroe, a.b., m.d., *Research Fellow in Physiology*

Harry B. Martin, a.b., m.d., *Research Fellow in Physiology*

Charles D. Cook, a.b., m.d., *Associate in Pediatrics*

Physiology 1a,b. Human Physiology

Lectures and demonstrations. *Tuesdays and Thursdays, 10–11, first and second periods.* Dr. Mead and Dr. Frank.

Credit 2 units.

This course places emphasis on aspects of human physiology which are of importance in specific public health problems, and is intended for students who lack a background in principles of physiology.

Prerequisites: College courses in physics, chemistry and mathematics.

Physiology 2c. Environmental Physiology

Lectures and conferences. Two hours a week, time to be arranged, third period. Dr. Forbes.

Credit 1 unit.

The course is intended for students specializing in the field of occupational

health. The subject matter will include physical fitness, exercise and work under various environmental conditions, and the effects of state of health and age upon physical performance and fatigue. Energy cost and efficiency will be related to different kinds of activities in industry.

Master of Science in Hygiene candidates who wish to take this course must have had Physiology 1a,b or the equivalent.

Physiology 17a,b,c,d. Tutorial Program

Time and credit to be arranged.

Opportunities are provided for tutorial work at a master's degree level in the fields of respiratory physiology, toxicology, environmental hygiene and occupational medicine.

Physiology 20. Research

Properly qualified students are given opportunities to work in the laboratory provided they can devote an acceptable amount of time to such work.

Physiology 40d. Toxicology of Air Contaminants

Lectures and demonstrations. Two hours a week, time to be arranged, fourth period. Dr. Amdur.

Credit 1 unit.

The aim of this course is to develop an understanding of the toxicology of materials entering the body through the respiratory tract. Subject matter will include experimental methods of exposures to gases and aerosols, statistical treatment and interpretation of data, the principles of physiology governing absorption of inhaled material, and the retention of particulate matter by the respiratory system. The toxicity of specific compounds and classes of compounds will be discussed.

Physiology 41d. Special Topics in Respiratory Physiology

Lectures. Two hours a week, time to be arranged, fourth period. Dr. Mead.

Credit 1 unit.

This course will cover special topics in respiratory physiology, according to the interests of the students. It is intended primarily for students in the aviation medicine program. Other students who are specializing in environmental hygiene may enroll with the consent of the instructor.

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF PUBLIC HEALTH PRACTICE

HUGH R. LEAVELL, S.B., M.D., DR.P.H., *Professor of Public Health Practice* and *Head of the Department*

FRANZ GOLDMANN, M.D., *Associate Professor of Medical Care, Emeritus*

LEONID S. SNEGIREFF, M.D., DR.P.H., *Associate Professor of Cancer Control*

GERALD CAPLAN, B.SC., M.B.,CH.B., M.D., *Associate Professor of Mental Health*

BENJAMIN D. PAUL, A.B., PH.D., *Associate Professor of Social Anthropology*

OZZIE G. SIMMONS, S.B., PH.D., *Associate Professor of Social Anthropology*

HELEN L. ROBERTS, A.B., M.D., M.P.H., *Lecturer on Public Health Practice*

IRWIN T. SANDERS, A.B., PH.D., *Lecturer on Sociology*

ALFRED L. FRECHETTE, M.D., M.P.H., *Assistant Professor of Public Health Practice* and *Director, Health, Hospital and Medical Care Division, United Community Services of Metropolitan Boston*

WARREN T. VAUGHAN, JR., S.B., M.D., *Assistant Professor of Mental Health* and *Director, Division of Mental Hygiene, Massachusetts Department of Mental Health*

ROY F FEEMSTER, A.B., M.D., DR.P.H., *Assistant Professor of Public Health Practice* and *Director, Division of Communicable Diseases, Department of Public Health of Massachusetts*

SOL LEVINE, PH.D., *Assistant Professor of Social Psychology*

EDWARD A. MASON, A.B., M.D., *Assistant Professor of Mental Health*

MARJORIE A. C. YOUNG, ED.M., DR.P.H., *Assistant Professor of Health Education*

SIDNEY S. LEE, S.B., M.D., DR.P.H., *Associate in Public Health Practice* and *Director of Clinical Services, Beth Israel Hospital*

JOHN H. CAULEY, M.D., M.P.H., *Lecturer on Public Health Practice* and *Commissioner of Public Health, City of Boston Health Department*

HARRY T. PHILLIPS, M.B.,CH.B., D.P.H., M.D., *Lecturer on Public Health Practice*

MARY LEE INGBAR, S.B., PH.D., M.P.H., *Lecturer on Medical Economics*

THOMAS R. DAWBER, A.B., M.D., M.P.H., *Lecturer on Chronic Disease and Gerontology*

LOUISA P. HOWE, PH.D., *Lecturer on Mental Health*

EDWIN F. DAILY, M.D., *Visiting Lecturer on Medical Care*

HOWARD A. RUSK, A.B., M.D., S.D. (hon.), *Visiting Lecturer on Public Health Practice*

DEAN W. ROBERTS, A.B., M.D., M.P.H., *Visiting Lecturer on Medical Care*

GEORGE ROSEN, S.B., M.D., PH.D., M.P.H., *Visiting Lecturer on Medical Care*

ROBERT H. HAMLIN, A.B., M.D., M.P.H., LL.B., *Visiting Lecturer on Public Health Law*

Leonard A. Scheele, a.b., m.d., ll.d., s.d. (hon.), *Visiting Lecturer on Public Health Practice*

George T. Nilson, s.b., ed.m., m.p.h., *Visiting Lecturer on Health Education*

Herbert L. Lombard, a.b., m.d., m.p.h., *Instructor in Public Health Practice* and *Director, Division of Cancer and Chronic Diseases, Department of Public Health of Massachusetts*

Robert E. Archibald, m.d., m.p.h., *Instructor in Public Health Practice* and *Deputy Commissioner, Department of Public Health of Massachusetts*

Franklyn B. Amos, m.d., m.p.h., *Instructor in Public Health Practice*

Clarence I. Sterling, s.b., *Instructor in Public Health Practice* and *Deputy Commissioner, Department of Public Health of Massachusetts*

Kenneth I. E. Macleod, m.b.,ch.b., m.p.h., *Instructor in Public Health Practice*

Elizabeth B. White, a.b., n.m., a.m., *Instructor in Public Health Nursing*

Olive M. Lombard, b.sc., s.m. in hyg., *Instructor in Public Health Practice*

Donald C. Klein, a.b., ph.d., *Instructor in Mental Health*

Arthur C. K. Hallock, a.b., *Instructor in Mental Health*

Bellenden R. Hutcheson, b.sc., m.b., m.d., *Instructor in Mental Health*

Pearl P. Rosenberg, ph.d., *Instructor in Mental Health*

A. Paul Hare, s.b., ph.d., *Instructor in Mental Health*

Bessie S. Dana, a.b., s.s.m., *Instructor in Public Health Social Work*

David W. Barkley, ph.d., m.p.a., *Instructor in Public Health Practice*

Jacob I. Hurwitz, s.b., s.m., ph.d., *Instructor in Mental Health*

Augusta F. Law, a.b., m.d., m.p.h., *Instructor in Public Health Practice*

Charlotte E. Owens, s.b., m.p.h., *Instructor in Mental Health*

Eleanor H. Smith, a.b., m.d., m.p.h., *Instructor in Public Health Practice*

Leon J. Taubenhaus, a.b., m.d., m.p.h., *Instructor in Public Health Practice*

David M. Kaplan, s.m., *Instructor in Mental Health*

Ann M. Thomson, s.b., m.p.h., *Instructor in Public Health Nursing*

Mary D. Bain, a.b., m.d., *Instructor in Mental Health*

Saul Cooper, a.b., a.m., *Instructor in Mental Health*

John G. McCormick, s.m., *Instructor in Health Education*

Naomi C. Turner, a.b., ed.m., *Research Associate in Dental Public Health*

Barbara Ayres, a.m., ph.d., *Research Associate in Mental Health*

Leota L. Janke, ph.d., *Research Associate in Psychology*

Herbert Naboisek, s.b., a.m., ph.d., *Research Associate in Psychology*

Ralph R. Notman, b.a., m.d.,c.m., *Research Associate in Mental Health*

Dorothy M. Mathews, a.b., s.s.m., *Research Associate in Social Work*

HILDA ROSENBLOOM KAHNE, PH.D., *Research Associate in Economics*

WILLIAM S. FLASH, A.B., M.P.A., PH.D., *Research Associate in Public Administration* (Absent 1958–59)

HOWARD E. FREEMAN, PH.D., *Research Associate in Sociology*

EDWARD WELLIN, PH.D., S.M. IN HYG., *Research Associate in Social Anthropology*

FRANCES H. PITTS, S.B., S.M.HYG.&PHYS.ED., M.P.H., *Research Associate in Health Education*

FRANCES M. HEALD, A.B., S.M., S.M. IN HYG., *Assistant in Public Health Social Work*

LILLY C. MOBERG, *Assistant in Public Health Nursing*

RAYMOND F. WAGNER, S.B., S.M., *Assistant in Public Health Practice*

GRACE WYSHAK, A.B., S.M. IN HYG., *Assistant in Public Health Practice*

EDNA L. SKELLEY, S.B., A.M., *Assistant in Public Health Nursing*

THOMAS F. A. PLAUT, PH.D., M.P.H., *Research Fellow in Mental Health*

ERICH LINDEMANN, PH.D., M.D., *Professor of Psychiatry*

SHIELDS WARREN, A.B., M.D., S.D. (hon.), LL.D., *Professor of Pathology at the New England Deaconess Hospital*

SIDNEY FARBER, S.B., M.D., *Professor of Pathology at The Children's Hospital*

DEAN A. CLARK, B.A., B.SC., M.D., *Clinical Professor of Preventive Medicine* and *General Director of the Massachusetts General Hospital*

PAUL K. LOSCH, D.D.S., *Associate Professor of Pediatric Dentistry at the Children's Hospital*

JAMES M. DUNNING, A.B., D.D.S., M.P.H., *Lecturer on Public Health Dentistry, Harvard School of Dental Medicine* and *Director, Dental Health Service, University Health Services*

CECIL G. SHEPS, M.D., M.P.H., *Lecturer on Preventive Medicine, Harvard Medical School,* and *General Director, Beth Israel Hospital*

WILLIAM J. CURRAN, LL.M., S.M. IN HYG., *Lecturer on Law, Department of Legal Medicine, Harvard Medical School (Professor of Legal Medicine, Director, Law-Medicine Research Institute, Boston University)*

The Department of Public Health Practice is working toward specific objectives in the three broad areas of education, research and administration. In education the Department seeks:

(a) To develop leaders in administration who will be prepared to study objectively and deal effectively with the changing administrative problems of the future. Such leaders should be competent to organize and administer programs for service, education, research or a combination of these activities.

(b) To educate leaders in the content and administration of special fields of public health for which the Department has particular responsibility. At present these include the following fields: chronic disease control and gerontology, public health dentistry, health education, medical care administration, mental health, public health law, public health nursing, public health social work and rehabilitation.

(c) To provide opportunities for specialists majoring in other departments of the School to develop an appreciation of the relationships between their own special field, public health as a whole, and the communities in which they will work.

(d) To provide a background in the concepts and research methods of the behavioral sciences for those students whose future activities will require their close cooperation with experts in the various behavioral sciences.

In research the Department seeks to stimulate and carry on research in the special fields of public health for which the Department is responsible. This includes the areas in which health and the behavioral sciences have important interfaces, as well as comparative studies of administrative problems and methods in different parts of the world, with the purpose of finding principles of broad applicability.

It is the Department's objective to provide consultation and community service to the extent that is consistent with the development and maintenance of a strong educational and research program.

Public Health Practice 1b,c. Principles of Public Health Practice

Seminars and lectures. *Mondays and Fridays, 9–11, Wednesdays, 9–10, second period; Wednesdays, 9–11, third period.* Dr. LEAVELL and associates.

Credit 3 units.

Required of Master of Public Health candidates. Candidates for the degree of Master of Science in Hygiene may also elect this course.

An introduction to public health practice in which the principles of understanding people, of administrative organization, personnel management, financing of health services and public health law are presented as the basis of sound public health administration.

Special consideration is given to the work of the various members of the public health team and to the types and inter-relationships of the official and voluntary agencies in which they work at different levels of political units and in different countries. Problems in the organization and administration of medical care for the sick are dealt with in an introductory way.

Case studies illustrating administrative problems provide a basis for discussions in small seminar groups.

Public Health Practice 2c,d. Organization and Administration of Medical Care

Seminars. *Thursdays, 2–4, third and fourth periods.*

Credit 2 units.

This course deals with the adaptation of medicine and the related sciences to social needs. It places special emphasis on basic principles, problems and patterns of meeting the needs, demands and desires of consumers of medical care.

Among various aspects which are discussed are: factors which affect the quantity and quality of professional personnel; facilities and plans for financing; technics for studying the influence of organizational structure and administrative technic on the output of medical care and methods of estimating desires, needs and demands for services, particularly as they are affected by various methods of financing.

The programs of both voluntary and public agencies are studied at various governmental levels.

Public Health Practice 4c,d. Control of Chronic Disease and Cancer, Gerontology and Rehabilitation

Lectures and seminars. *Fridays, 11–1, third and fourth periods.* Dr. Snegireff and Miss Rice.

Credit 2 units.

The control of chronic disease and of cancer is discussed from the viewpoint of the administrator. Authorities in the various aspects of the program discuss specific phases of the problems.

Discussion periods and field visits are arranged to supplement lectures in order to give the administrator a balanced view of the subjects as they are related to existing facilities and community programs.

Rehabilitation as an essential part of programs of chronic disease control and gerontology is discussed. Pertinent content is presented, such as the development of the rehabilitation concept and philosophy, the variety of programs required in comprehensive rehabilitation, problems of employment, and the federal and state rehabilitation services. Consideration is given to care of the physically handicapped, the mentally ill, and the homebound. Rehabilitation centers are visited, and other field visits are available.

Public Health Practice 5c,d. Health Education

Seminars. Two hours a week, time to be arranged, third and fourth periods. Dr. Young.

Credit 2 units.

This is a problems discussion course focussing principally on how people

learn; barriers to health education; methods used in health education; the practical, psychological, cultural and attitudinal factors to be considered in health education; and evaluation of health education efforts. Major emphasis is placed on community health programs and problems, with the school system being considered an integral and important part of the community.

Public Health Practice 6c,d. Group Dynamics

Seminars. Two hours a week, time to be arranged, third and fourth periods. Dr. ROSENBERG.

Credit 2 units.

The aim of this course is to teach the theory of groups, their general processes, their development and ways of operating. Group principles are taught through both theoretical and practical discussions, with the class itself serving as the practice laboratory for studying and developing group processes and skills.

Public Health Practice 7d. Principles of Supervision and Consultation

Seminars. *Tuesdays, 11–1, fourth period.* Mrs. DANA and Miss RICE.

Credit 1 unit.

The first half of the course is devoted to the discussion of supervision in terms of objectives, methods, and principles. The case method is employed to illustrate the application of supervisory principles to actual learning situations in the various fields of public health.

The second half of the course is concerned with the development of the basic principles of consultation through 1) an examination of the expectations of the consultee and the practices of the consultant from the point of view of the various health disciplines and 2) a consideration of the consultative methods employed in problem solving, staff development, and program planning in the health and welfare fields.

The differences between supervision and consultation are evaluated.

Public Health Practice 8d. Legal Problems of Organized Health Programs

Seminars. *Wednesdays, 9–11, fourth period.* Mr. CURRAN.

Credit 1 unit.

The seminar is primarily designed for those who are or who may become administrators and policy-makers including health officers, nurse supervisors, medical care personnel, sanitary engineers, or other similar personnel, in public or private agencies. Seminars will include discussions on: (a) utilization of the law in implementing health programs; (b) the liability of health personnel and health organizations in the operation of their programs; (c) the development and comparison of legal and medical standards of practice,

particularly how these standards on a legal basis may be used to increase and maintain the quality of health programs; (d) the preparation of health department regulations; (e) the preparation and presentation of medical evidence for hearings, court procedures, etc.; (f) the legal problems of disease control; and (g) various legal and administrative forms of health practice.

Public Health Practice 9c,d. The Control of Mental Disorders

Seminars. *Tuesdays, 2–4, third and fourth periods.* Dr. CAPLAN and associates.

Credit 2 units.

This seminar is designed to give public health workers some insight into the problems of organizing community programs for the control of the common mental disorders. The work of different community agencies designed to treat and prevent disorders such as psychoses, psychoneuroses, psychosomatic disorders, mental retardation, alcoholism, and drug addiction is reviewed. Such agencies include mental hospitals, psychiatric departments of general hospitals, child guidance clinics, and community mental health centers. Organizational policies of state and local official and voluntary mental health agencies are discussed, and some attention is given to problems of research and training in prevention, treatment, and rehabilitation methods, as well as to the implications of these topics for the collaboration of mental health workers and public health workers.

Public Health Practice 10c,d. Organization and Administration of Health Agencies. Public Health Administration, Health Education, Public Health Nursing and Social Work in Health Agencies.

Seminars and field study. *Mondays, Wednesdays and Fridays, 2–4, third and fourth periods.* Dr. LEAVELL, Dr. YOUNG, Mrs. CUMINGS, Miss RICE and associates.

Credit 6 units.

Practical application of public health practice principles is developed through problem centered seminars. Each student is assigned to a small group to study a broad and current health problem, and works with the seminar leader and various specialists. Particular attention is given to the health education role of each member of the health team and to nursing and social work activities. The necessity for team work is illustrated. Broad aspects of public health administration and reports on each problem studied by the small seminar groups are discussed by the class in general sessions.

Prerequisite: Public Health Practice 1b,c.

Public Health Practice 11c,d. Health and Illness in Cross-Cultural Perspective

Seminars. *Wednesdays, 4–6, third and fourth periods.* Dr. PAUL.

Credit 2 units.

This course, also listed as Social Relations 283, is designed for public health students who seek greater familiarity with social and cultural aspects of medicine in this and other countries, and for social science students interested in health and health services as a research area. Much of the course consists of presentations by experts conducting specific studies of a sociomedical nature, followed by informal class discussion. Admission is limited and requires consent of the instructor.

Public Health Practice 15a,b,c,d. Special Seminars

Seminars. *Wednesdays, 11–1 in all four periods*; other time to be arranged. Staff of the Department.

Credit 4–8 units.

Special seminars are designed to give students with interest in one of the major disciplines in public health, or in a particular type of public health problem or methodology, opportunities to: 1) develop and discuss in the seminar group individual projects on which students will be working during the year; 2) study problems of interest to the special group which are not to be dealt with in the basic courses or in advanced electives; and 3) provide opportunities for a group with a special interest to meet together regularly during the year.

Each special seminar will have a faculty leader chosen because of special competence in the particular field. From time to time two or more of the special seminar groups may meet together to discuss problems of concern to more than one group.

Each student will be expected to work on an individual project with the advice of a faculty member; credit will be proportional to the time involved in the study.

Public Health Practice 17a,b,c,d. Special Projects

Time and credit to be arranged.

Students at the master's level may make arrangements to do individual work on a special project, under the guidance of a member of the Staff of the Department. These projects may include work in various areas of public health practice, such as medical care, mental health, cancer control, etc.

Public Health Practice 20. Research

Doctoral candidates are offered the opportunity to undertake individual study and research as the basis for a doctoral thesis.

Public Health Practice 30. Assignments to Field Agencies

March 16–28, 1959; other assignments to be arranged.

Credit 2 units.

Students are assigned to work in the field on special projects, on surveys or other types of field projects in groups, or for observation of and limited participation in the work of health agencies.

Field assignments are made on an individual basis to meet special needs of each student in so far as possible. Work in the field is coordinated with courses in the Department.

Public Health Practice 40a,b. Factors in Health and Disease

Seminars and demonstrations. *Fridays, 2–4, first and second periods.* Staff of the Department and other departments.

Credit 2 units.

This course is designed primarily for students in the Department of Public Health Practice who are candidates for the degree of Master of Science in Hygiene. It will be an inquiry into and integration of selected topical areas in basic sciences of fundamental and practical importance for public health personnel. The main subject areas of the course will be economic geography and nutrition (e.g., agricultural practices and their influence on public health) and the relation between environment and health (e.g., natural hazards, climate, radiation, smog, etc.).

DEPARTMENT OF SANITARY ENGINEERING

Gordon M. Fair, s.b., s.m. (hon.), dr. ing. (hon.), *Abbott and James Lawrence Professor of Engineering, Gordon McKay Professor of Sanitary Engineering* and *Head of the Department*

Harold A. Thomas, Jr., s.d., *Gordon McKay Professor of Civil and Sanitary Engineering*

J. Carrell Morris, s.b., ph.d., *Gordon McKay Professor of Sanitary Chemistry*

Ralph E. Wheeler, a.b., m.d., dr.p.h., *Lecturer on Sanitary Biology*

Leon A. Bradley, s.b., ph.d., *Lecturer on Sanitary Engineering*

Wilfred B. Krabek, s.m., *Instructor in Sanitary Biology*

Sanitary Engineering 1b. Principles of Sanitation

Lectures and demonstrations. *Tuesdays and Saturdays, 9–11, Thursdays, 10–11, second period.* Professor Fair, Professor Thomas, Professor Morris and Dr. Bradley.

Credit 2.5 units.

Required of Master of Public Health candidates. Candidates for the degree of Master of Science in Hygiene may also elect this course.

This course endeavors to live up to its name by emphasizing the broad engineering principles useful in environmental control. These principles are

presented in a manner appropriate to students who have no engineering background. Technics of control are discussed, but are presented as illustrations of principle, not as rule-of-thumb procedures which the student is expected to learn by rote. A few field visits are made to show the application of principles in practice.

The objective of the course is not the conversion of the student into a sanitation expert, ready to design water works, or prescribe pasteurization systems, but rather to prepare him to advise, to cooperate with, and to understand the people who are to do the job. It also acquaints him with the nature and extent of the sanitary problem, with what can be and has been accomplished by sanitation, and with what may be expected to be accomplished in the future.

The topics considered include: water supply and purification; sewerage and sewage treatment; refuse collection and disposal; and food, milk and shellfish sanitation.

Sanitary Engineering 2a,b. Sanitary Bacteriology

Lectures and laboratory. *Tuesdays, Thursdays and Saturdays, 8–9 and one three-hour laboratory period a week, first and second periods.* Dr. WHEELER.

Credit 5 units.

Bacterial cytology and physiology. Quantitative bacteriology. Destruction of bacteria. Antibiosis. Immunity. Bacteriology of air, water, foods, swimming pools, soils and sewage. Viruses.

This is the same course as Engineering 274a.

Sanitary Engineering 3c,d. Sanitary Parasitology

Lectures and laboratory. *Tuesdays, Thursdays and Saturdays, 8–9 and one three-hour laboratory period a week, third and fourth periods.* Dr. WHEELER.

Credit 5 units.

Parasitology and control of diseases due to animal parasites. Sanitary entomology. Rodents and rodent control.

This is the same course as Engineering 274b.

The following courses of instruction offered in the Division of Engineering and Applied Physics of the Graduate School of Arts and Sciences are open to properly qualified students:

Engineering 270a. Hydrology and Hydraulics of Water Supply and Waste-Water Disposal. Professor FAIR.

Engineering 270b. Water Purification and Waste-Water Treatment. Professor FAIR.

Engineering 271. Experimental Water Purification and Waste-Water Treatment. Professor THOMAS and Assistant Professor STUMM.

Engineering 272. Sanitary Chemistry. Assistant Professor STUMM.

Engineering 273. Stream Hydrology. Professor THOMAS.

Engineering 275. Seminar on Industrial Water Supply and Waste-Water Disposal. Mr. MOORE.

Engineering 276. Advanced Techniques in Water and Sewage Analysis. Professor MORRIS.

DEPARTMENT OF TROPICAL PUBLIC HEALTH

THOMAS H. WELLER, A.B., S.M., M.D., LL.D., *Richard Pearson Strong Professor of Tropical Public Health* and *Head of the Department*

GEORGE C. SHATTUCK, A.B., M.D., A.M. (hon.), *Clinical Professor of Tropical Medicine, Emeritus*

DONALD L. AUGUSTINE, S.B., S.D., S.D. (hon.), A.M. (hon.), *Professor of Tropical Public Health*

FRANKLIN A. NEVA, S.B., M.D., *Associate Professor of Tropical Public Health*

ELI CHERNIN, S.B., A.M., S.D., *Assistant Professor of Tropical Public Health*

PAUL F. RUSSELL, A.B., M.D., M.P.H., *Visiting Lecturer on Tropical Public Health*

FRED L. SOPER, A.B., S.M., M.D., DR.P.H., *Visiting Lecturer on Tropical Public Health*

GEORGE M. SAUNDERS, A.B., M.D., *Visiting Lecturer on Tropical Public Health*

WILLARD H. WRIGHT, D.V.M., S.M., PH.D., *Visiting Lecturer on Tropical Public Health*

JACQUES M. MAY, M.D., *Visiting Lecturer on Tropical Public Health*

SAMUEL W. SIMMONS, S.B., PH.D., *Visiting Lecturer on Tropical Public Health*

GEORGE R. COATNEY, PH.D., *Visiting Lecturer on Tropical Public Health*

HARRY MOST, S.B., M.D., D.T.M. & H., D.M.S., *Visiting Lecturer on Tropical Public Health*

DONALD B. MCMULLEN, S.D., *Visiting Lecturer on Tropical Public Health*

CHIA-TUNG PAN, B.SC., M.D., M.P.H., *Instructor in Tropical Public Health*

EDWARD H. MICHELSON, S.M., PH.D., *Instructor in Tropical Public Health*

JAMES B. HANSHAW, A.B., M.D., *Research Fellow in Tropical Public Health*

MARENES R. TRIPP, A.B., S.M., PH.D., *Research Fellow in Tropical Public Health*

JOHN H. HANKS, S.B., PH.D., *Lecturer on Bacteriology and Immunology*

The health problems of the tropical regions are, for the most part, those of the poorly sanitated areas of the world at large. In such areas the communicable and nutritional diseases are of primary import. The teaching and research interests of the Department of Tropical Public Health deal with the former category — the communicable diseases. Emphasis is given to disease entities that have tended to recede before the advances of public health in the more developed areas of the world, and on a much smaller group of diseases that are tropical in an obligatory sense for climatic or other reasons. In the presentation of factual material, equal emphasis is given to ecological and epidemiological factors, to new knowledge concerning pathogenesis and diagnosis, and to prevention and control.

The basic course, Microbiology-Tropical Public Health 1a,b, is designed to provide the Master of Public Health candidate with an integrated presentation of information on communicable diseases of major public health importance. Tropical Public Health 2a,b is designed for the Master of Public Health candidate concentrating in the field of Tropical Public Health. Attention is directed to Tropical Public Health 3d, open to all students, which deals with environmental and cultural factors influencing the development of health programs in tropical areas. With the exception of Tropical Public Health 3d, admission to the basic courses is contingent upon an adequate background in the pre-clinical medical sciences, especially pathology.

The investigative program in the Department is broad and currently deals with pathogens ranging from viruses to helminths. Thus, studies on the *in vitro* cultivation and the physiology and immunology of a wide variety of agents are in progress. Biological investigations on the molluscan vectors of the schistosomes comprise another area of major interest. Facilities are available for the training of a limited number of students at the Doctor of Public Health or Doctor of Science in Hygiene level, who may wish to spend a minimum of two years with emphasis on a program of original research. Due to time limitations, the Doctor of Science in Hygiene applicant should, in so far as possible, obtain the necessary medical science background prior to enrollment.

Microbiology and Tropical Public Health 1a,b. Ecology and Epidemiology of Infectious Diseases

Lectures, seminars, conferences and laboratory exercises. *Tuesdays and Thursdays, 2–5, first and second periods; Saturdays, 10–12, first period, 11–1, second period.* Dr. Snyder, Dr. Weller and the staff of the two Departments.

Credit 6 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 13 credit units.

In 1958–59 this course will be developed under the general direction of

Drs. Snyder and Weller, with the collaboration of the staff of the Departments of Microbiology, Tropical Public Health and Epidemiology. The purpose of the course is to provide students in the Master of Public Health program with the basic knowledge of the communicable and infectious diseases, including the relevant ecologic factors which pertain directly to their prevention and control.

Microbiology and Tropical Public Health 1a,b is designed for students who have had most of the courses given in the first two years of medical school or their equivalent. The plan of the course includes several features which are new to the curriculum of the School. The introductory exercises provide an analysis of the present status of infectious diseases in tropical and temperate climates and the technics available for study of microorganisms and parasites, with special reference to recent methods which have opened a new era in microbiology. The course then considers the principal diseases of public health importance beginning with arthropod-borne diseases and infections primarily involving the intestinal tract. In each category the subjects are presented by etiologic agent, including protozoa, helminths, viruses, rickettsiae, spirochetes and bacteria.

Approximately two-thirds of the time will be devoted to lectures and one-third to conferences, seminar discussions, and laboratory exercises. In the laboratory the student is expected to acquire an understanding of the potentialities as well as the limitations of pertinent public health laboratory procedures.

Tropical Public Health 2a,b, 2c,d. Ecology and Prevention of Tropical Diseases

Seminars, laboratory exercises, assigned reading. *Wednesdays, 11–1, all four periods.* Dr. Augustine, Dr. Neva, and Dr. Chernin.

Credit 2 units in each term.

This course is designed for students concentrating in the Department of Tropical Public Health. It is planned to supplement Microbiology-Tropical Public Health 1a,b, and deals with important disease entities omitted from the basic course because of time limitations. Emphasis is placed on the ecological and epidemiological approach to the multiplicity of interrelated factors governing the welfare of man in tropical and poorly sanitated areas.

Tropical Public Health 3d. Problems in Tropical Health

Lectures and conferences. *Thursdays, 11–1, fourth period.* Staff of the Department.

Credit 1 unit.

This course is designed to provide general background information on environmental, social, economic, and political factors influencing the develop-

ment of health programs in the tropics. At each session a distinguished guest lecturer covers an assigned topic; the subject material includes such diversified topics as the status of professional education in tropical areas, the importance of the zoonoses, and political policies in the field of international cooperation. Each formal presentation is followed by a period devoted to informal student discussion. Registration is open to all students.

Tropical Public Health 5c,d. Seminar

Seminars and discussions. One hour session twice a month throughout the third and fourth periods. Time to be arranged. Staff of the Department.

Credit .5 unit.

Students particularly interested in tropical health will meet with staff members for the presentation and discussion of current literature and original investigations. Admission for credit is subject to the approval of the Head of the Department, and the total number of students is limited.

Tropical Public Health 6c. Parasitic Infections of Man

Lectures, laboratory exercises, and demonstrations. *Tuesdays, 8:30–12:30, and Fridays, 2–5, January and February.* Dr. WELLER, Dr. AUGUSTINE, Dr. NEVA, Dr. CHERNIN and associates.

Credit 1.5 units.

This course is designed primarily for students in the School of Medicine. It is open, however, to a limited number of students registered in the School of Public Health. The important helminth and protozoan parasites of man are considered with reference to their geographic distribution, identification, mode of transmission, pathogenesis, immune reactions, and methods for prevention and control. Clinical aspects and chemotherapy of parasitic diseases are discussed. Emphasis is given to methods of laboratory diagnosis. Arthropods of parasitologic importance are briefly surveyed.

Tropical Public Health 20. Research

Opportunity is offered to qualified students to work on problems under the supervision of the staff. A number of parasites of medical importance are maintained for studies on metabolism, host-parasite relations, and chemotherapy. Arrangements may be made for students to work in laboratories of hospitals situated within the tropics or to cooperate in organized field investigations.

Tropical Public Health 40d. Laboratory Technics

Conferences and laboratory. Two afternoons a week, fourth period. Dr. PAN.

Credit 1 unit.

Students are offered the opportunity to learn the technics of handling parasitic agents in culture or in laboratory animals, and to gain experience in the use of procedures employed in diagnostic and research laboratory work.

Enrollment limited and subject to the approval of the instructor.

Tropical Public Health 41d. Introduction to Molluscs of Public Health Importance

Conferences, laboratory and field exercises. One afternoon a week, fourth period. Dr. MICHELSON.

Credit 1 unit.

This is an introductory course designed to acquaint the student with the molluscs which may act either as active or passive agents for the dispersal of pathogens, toxins, or parasites which cause disease in man. Students will be offered the opportunity to study field and laboratory technics necessary for an understanding of the taxonomy, morphology, cultivation, ecology and control of these molluscs.

Prerequisite: Consent of instructor.

Section IV
General Information

GENERAL INFORMATION

Registration

Registration in the School of Public Health for the academic year 1958–59 takes place from Monday, September 15 to Friday, September 19. Each student will be assigned a Faculty Advisor who will help him with his selection of courses and will advise him throughout the year. Those students who wish to concentrate in a department will be assigned an advisor from that department. Those students whose interests are in more than one department, or who are undecided as to their field of concentration, will be assigned an advisor from the Committee on Admissions and Degrees. Adequate time during registration week should be allowed by the student for discussion of his program with his advisor and the Dean or the Assistant Deans of the School.

Foreign Students

An orientation course for students coming to the United States for the first time will be held at the School of Public Health from Monday, September 8 to Friday, September 19, 1958. The program is planned to acquaint the students with our customs and teaching methods, with library and other facilities available. It will include lectures and seminars, visits to various University departments and to hospitals or public health activities in Boston.

During this period each student who comes from outside the United States will have a conference with the Faculty Advisor for Foreign Students to discuss his particular needs and interests. This Advisor, as well as the staff of the Dean's Office, is available for consultation with students throughout the year.

All students who are not citizens of the United States will be referred during the orientation period to the Counsellor for Foreign Students, 24 Quincy Street, Cambridge, where they will show their passports, and fill out a Student Registration form.

Fees and Expenses

The fee for tuition is $1,150 for the academic year for full-time students. Each candidate for a degree must have one year of residence at the School at full tuition. Degree candidates enrolled for more than one year may pay tuition at a reduced rate, depending on the amount of time spent at the School, as follows:

Candidates for Master's Degrees:

1. Second year at half tuition rate if the student is studying at the School full-time; in proportion for less than full-time, but not less than $100 per term.

2. Second year, if the student is away from the School and working on a prescribed program of field training, a guidance fee of $100 per term.

Candidates for Doctoral Degrees:

1. One year of residence and full tuition beyond the Master's degree or equivalent.

2. Second year at half-rate tuition if the student is continuing studies at the School full-time; in proportion for less than full-time, but not less than $100 per term.

3. Second year, if the student is away from the School and working on his thesis, a guidance fee of $100 per term.

4. After the second year, no tuition fee unless the student is working at the School; in such cases the tuition is $100 per term.

Part-time Special Students

The tuition fee for part-time special students varies according to the courses taken and is based on the proportion of the annual fee for instruction which the credit units for each course bear to the total number of credits necessary for the degree of Master of Public Health, plus $5.00 for each course. For example, a part-time student taking a course with a credit unit value of 2 would pay a tuition fee of $62.50; a student taking a course with a credit unit value of 4 would pay $120.00. If a part-time student, who has paid tuition at

the course rate, becomes a degree candidate, the $5.00 course fees are not included as part of the tuition required for the degree.

Health Fee

Each full-time student will be charged a fee of $68 per year for health and medical care. Part-time students working at the *rate* of substantially half-time or less and living at home may be excused from the payment of such fee at any time within two weeks after their registration, upon the recommendation of the Dean.

Payment of Fees

Bills for tuition and fees will be issued and payable as follows:

Issued	*Payable*	
At registration	Presentation	¼ of the tuition for the year ½ medical and hospital fee for the year
Nov. 20	Dec. 10	¼ of the tuition for the year board through October 31 miscellaneous charges
Jan. 20	Feb. 10	¼ of the tuition for the year ½ medical and hospital fee for the year board through December 31 miscellaneous charges
April 21	May 11	¼ of the tuition for the year board through March 31 miscellaneous charges
June 3 *	June 10	board to the end of the year miscellaneous charges
June 30	July 15	board to the end of the year miscellaneous charges

Students who are candidates for degrees must have paid all dues to the University at least one day before the day upon which the degrees are to be voted. A student who leaves during the year is charged to the end of the tuition period in which he leaves provided before

* Applies only to candidates for degrees.

that time he gives the Dean notice in writing of his withdrawal; otherwise he is charged to the end of the tuition period in which such notice is given.

A student who leaves the University for any reason whatever must pay all charges against him immediately upon receipt of a bill from the Bursar. Every student will be held responsible for the payment of fees until he has notified the Dean of his intention to withdraw from the School.

All term bills will be sent to the student at his local address unless the Bursar is requested in writing to send them elsewhere.

Any student who fails to pay his term bills, or to make arrangements with the Bursar for their postponement, within three days of the date fixed for payment, shall be deprived of the privileges of the University until he is reinstated. Reinstatement is obtained only by consent of the Dean of the School after payment of all indebtedness, and a reinstatement fee of $10.

Bond Requirement

Upon entrance to the School every student is required to file with the Bursar a bond in the sum of $500 as security for payment of University bills. The bond must be signed by two bondsmen, both of whom must be citizens of the United States, or by a surety company duly qualified to do business in Massachusetts. No officer or student of the University will be accepted as a bondsman and in no case will more than one parent be accepted. In lieu of the bond a student may deposit with the Bursar $500 in United States Treasury coupon-bearing bonds, or $500 in cash, which will bear no interest. Blank forms of bonds may be obtained at the Dean's office or from the Bursar.

Student Health Service

Under the University Health and Insurance Plan students at the School receive medical care in the Harvard Medical Center Clinic at the Peter Bent Brigham Hospital and insurance toward hospital expenses, at a fee of $68 per year. All full-time students are re-

quired to pay this fee. The hospital insurance runs for a period of twelve months and covers hospitalization both in Boston and elsewhere.

Officers of the armed services, or those required to carry hospital insurance by governmental agencies may request exemption from the insurance portion of the fee but will be required to pay the clinic fee in the amount of $48. Exemption from the insurance will be granted only after the student submits evidence that he has satisfactory coverage for hospital expenses.

Dependents of students may be included in the insurance aspects of the plan, if the student so elects; the rates are $36 for wives or husbands and $22 for one or more children, for twelve months.

Every new student paying the medical fee is required to undergo a complete medical examination, by appointment, shortly after admission to the School.

Evidence of recent successful vaccination against smallpox is required for entrance to Harvard University and a certification form for this purpose is sent to each student who is accepted for admission.

Any illness necessitating absence from classes should be reported to the Student Health Office by the student, or an attending physician, and to the Information Office at the School.

In order to realize maximum benefit from the opportunities provided by the academic program of the School, students must be in excellent physical and mental health. Prospective students are urged to undergo a thorough examination to satisfy themselves of their fitness before making arrangements to enter the School.

Housing

The School is glad to help students in finding suitable living quarters by supplying information about rooms and apartments near the School, but the responsibility for securing housing rests with the student. The School has leased six furnished apartments nearby, for rental to students during 1958–59. Other furnished rooms or apartments are available in the vicinity of the School, or in nearby resi-

dential areas such as Brookline. Houses or large apartments for families with children are more difficult to find and therefore married students who plan to bring their families are advised to arrive in Boston at least two weeks in advance of registration in order to have time to secure living quarters. There are no dormitories in the area for students of the School of Public Health but they may get their meals at Vanderbilt Hall dining room, the Medical School dormitory.

The University is opening its first dormitory for women graduate students in the fall of 1958. The building, located at 1595 Massachusetts Avenue, Cambridge, will provide rooms for 75 women in the several graduate schools, and spaces will be allotted in proportion to the number of women students enrolled in each school. The dormitory is about one hour by bus or streetcar from the School of Public Health.

Students who are interested in living in the women's dormitory or in one of the School's apartments, or who wish help in finding a house or apartment, may write to the Registrar, Office of the Dean, Harvard School of Public Health, 55 Shattuck Street, Boston. Married students should indicate the size of their family, number of rooms desired and the range in price that can be paid for furnished or unfurnished quarters. The School cannot, however, make final commitments for housing in advance of the student's arrival in Boston.

Employment

Generally it is not advisable for a student to seek employment as a means of financing his training because the course of study at the School is an intensive, full-time program. If the wife of a student has secretarial or technical skills and wishes to obtain temporary employment, she may consult the Harvard Medical Center Personnel Office in Building A of the Medical School after getting settled in Boston. Wives of foreign students who wish to work in Boston should indicate this when obtaining their visas for the United States.

Scholarships, Fellowships and Traineeships

The scholarships, fellowships and traineeships described below were available to students for the academic year 1958–59. It is expected that comparable awards will be available for 1959–60.

Applications for scholarships, traineeships and fellowships should be made to: The Secretary, Committee on Admissions and Degrees, Harvard School of Public Health, 55 Shattuck Street, Boston 15, Massachusetts. Applications should be received by April 1, 1959 for awards for the academic year 1959–60. Under exceptional circumstances awards may be made at other times. There are separate regulations for: Public Health Traineeships Title I (Paragraph 3), Atomic Energy Commission Fellowships (Paragraph 10) and Fellowships and Scholarships Available in other Departments of the University (page 97).

Scholarships

1. The Harvard School of Public Health has a limited amount of money to award as Harvard School of Public Health Scholarships or Harvard University General Scholarships. Preference will be given to students who intend to be or are doctoral degree candidates. These awards are made on the basis of outstanding promise.

2. There are a few scholarships which are available for students from certain parts of the world. These include United Fruit Company Scholarships for physicians who are citizens of Costa Rica, Guatemala, Honduras or Panama, and the Lyman and Grew Scholarship for students from Japan, Korea or China.

Traineeships and Fellowships

The following traineeships and fellowships are available only to citizens of the United States or to those who have filed a Declaration of Intent.

3. Public Health Service Traineeships Title I, for physicians, nutritionists, medical social workers, dentists, health educators, veterinarians and others whose professional skills are required in modern public health practice. Similar traineeships are also available

to those wishing to specialize in radiological hygiene and in air pollution control problems. Students are urged to apply directly to the Public Health Service: Chief, Division of General Health Services, Bureau of State Services, Public Health Service, U.S. Department of Health, Education and Welfare, Washington 25, D.C. A limited number of these traineeships are available from the institutional grant awarded by the Public Health Service to the School.

4. Public Health Service Traineeships Title II, Traineeships for Nurses, are all awarded from an institutional grant to the Harvard School of Public Health.

5. A fellowship awarded by the Children's Bureau through the Massachusetts State Department of Health, is available for a student who intends to specialize in Maternal and Child Health.

6. A two-year fellowship from the Charles H. Hood Dairy Foundation, Inc. is available for a pediatrician having special qualifications (i.e. nearing attainment of certification by the American Board of Pediatrics). The first year is to be spent working toward the degree of Master of Public Health, and the second may be used either to work toward a doctoral degree or in clinical pediatrics with emphasis on community child health work.

7. National Institutes of Health Fellowships. The National Institute of Mental Health has fellowships for psychiatrists, psychologists and social workers who wish to specialize in mental health aspects of public health. The other Institutes of Health such as the National Cancer Institute, National Institute of Arthritis and Metabolic Diseases, the National Heart Institute, etc. also have fellowships.

8. Traineeships in epidemiology are available to candidates with degrees of M.D., Ph.D. or equivalent. They are given on an annual basis and are renewable.

9. There are traineeships in biostatistics for pre-master's training and pre-doctoral research.

10. Fellowships are available in Industrial Medicine and Industrial Hygiene from the Atomic Energy Commission. Applicants for fellowships in Industrial Medicine (physicians only) should write to: A.E.C. Fellowships in Industrial Medicine, Atomic Energy

Project, University of Rochester, School of Medicine and Dentistry, Rochester 20, New York. Applicants for fellowships in Industrial Hygiene (industrial hygienists) should write to: Industrial Hygiene Fellowship Office, Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tennessee.

11. The Daniel and Florence Guggenheim Foundation gives the School two fellowships each year to be awarded to students who are in the program of the Guggenheim Center for Aviation Health and Safety at the School.

Fellowships and Scholarships Available in other Departments of the University as well as in the School of Public Health

There are a few General University Scholarships and Fellowships which, under the terms of the original gift to the University, may be awarded to students in any part of the University, including the School of Public Health. Many of these are for persons from a particular city, state or country, for study of a particular field, or for those with other special qualifications. Applications for these scholarships must be received at the School of Public Health by February 1, 1959. A pamphlet describing these University Scholarships may be obtained from the Secretary of Admissions and Scholarships of the School of Public Health.

STUDENTS, 1957–1958

Degree Candidates and Full-Time Special Students

Akin, Katharine L., A.B.	Atlanta, Ga.
Åström, Arne N. O., M.D.	Solna, Sweden
Bartlett, Jay P., S.B., M.D.	Ogden, Utah
Bjerkedal, Tor, M.D.	Oslo, Norway
Braye, William J., B.A., D.D.S.	Arlington, Va.
Brodarec, Ivo, M.D.	Zagreb, Yugoslavia
Brown, Edwin W., Jr., M.D., M.P.H.	Falls Church, Va.
Catlin, Randolph, M.D.	Charlottesville, Va.
Chugh, Manohar L., M.B.,B.S., D.T.M., D.P.H., D.I.H., M.P.H., DR.P.H.	Amritsar, India
Cohen, Felix, A.B., M.D.	Waban, Mass.
Cook, William N., A.B., M.D.	Columbia, Tenn.
Cooper, W. Clark, M.D.	Cincinnati, Ohio
Curran, William J., LL.B., LL.M.	Waban, Mass.
Davignon, Lise F., B.A., M.D.	Montreal, P.Q., Canada
Dawber, Thomas R., A.B., M.D.	Wellesley Hills, Mass.
Edwards, Phyllis Q., A.B., M.D.	Washington, D.C.
Eilertsen, Eilert H., M.D.	Bergen, Norway
Erhardt, Carl L., B.B.A., M.P.A.	Woodhaven, N.Y.
Flache, Stanislas G., M.D.	Beirut, Lebanon
Foehrenbach, Arthur J., A.B., M.S.S.	Albany, N.Y.
Freitas, M. Helena C., M.D.	Lisbon, Portugal
Fultyn, Robert V., S.B., S.M.	Chicago, Ill.
Galvão, Artur P., M.D.	Oeiras, Portugal
Groton, William M., M.D.	Westerly, R.I.
Handley, Arthur, B.C.E.	Averill Park, N.Y.
Hansen, Richard D., S.B., M.D.	Bloomington, Ind.
Hasan, Shubbar, B.SC., M.B.,B.S., T.D.D.	Lahore, Pakistan
Hass, Gerhardt C., B.CH.E.	Berkeley, Calif.
Hays, Linda Lee, S.B., S.M.	Louisville, Ky.
Highriter, Marion E., A.B., M.N.	Wilkes-Barre, Pa.
Horing, Leon, M.D.	Montevideo, Uruguay
Kannel, William B., M.D.	South Natick, Mass.
Kant, Lakshmi, M.B.,B.S., D.P.H., D.T.M.&H., D.I.H.	Patna, Bihar, India
Kasales, Clarence J., M.D.	Harrisburg, Pa.
Katz, Jacob, A.B., A.M.	Brighton, Mass.

Kershaw, Ernest C., S.B., ED.M., ED.D.	Houston, Texas
Kingsland, Lawrence C., S.B.CHEM.ENGIN., M.D.	Cohasset, Mass.
Klebanoff, Lewis B., A.B., A.M., PH.D.	Lexington, Mass.
Klerman, Lorraine V., A.B., M.P.H.	Watertown, Mass.
Kocher, Ruth E., S.B.	Jamestown, N.Y.
Kostrzewski, Jan K., M.D.	Warsaw, Poland
Kundsin, Ruth B., A.B., A.M.	Squantum, Mass.
Kurvink, Donald G., A.B., A.M.	Pierre, S.Dak.
Ladd, Arthur C., A.B., M.D.	San Francisco, Calif.
Lane, John C., M.B.,B.S.	Camberwell, Victoria, Australia
Lin, Hsiang Ju, A.B.	Cannes, France
McCammon, Curtis P., A.B., M.D.	Wartburg, Tenn.
McElroy, James, B.A., M.D.,C.M.	Winnipeg, Man., Canada
Maloof, Edward C., D.M.D.	Auburndale, Mass.
Mason, John, D.V.M., DR.VET., M.P.H.	Santa Fe, N.Mex.
Mattson, Phyllis H., A.B., S.M.	Berkeley, Calif.
Medalie, Jack H., B.SC., M.B.,CH.B.	Jerusalem, Israel
Mehta, Pramod C., M.B.,B.S., D.PED., F.C.P.S.,D.C.H.	Bombay, India
Mittal, Mool C., L.M.P.(C.P.), M.B., M.D.	Mussooree, U.P., India
Moniz, Artur E., M.D.	Lisbon, Portugal
Moses, Satyadas H., M.B.,B.S., D.T.M., B.S.SC., M.P.H.	Madras, India
Murray, James H., B.A., M,D.	Willowdale, Ont., Canada
Nakama, Christian S., A.B., M.S.I.R., S.M. IN HYG.	Honolulu, Hawaii
Neel, Spurgeon H., M.D.	Memphis, Tenn.
Nevison, Thomas O., A.B., M.D.	Lakewood, Ohio
Nordstrom, K. Lennart, Civilingenjör	Linköping, Sweden
Norval, Mildred A., A.B., S.M., M.D., S.M.	University City, Mo.
O'Doherty, Brian M., M.B.,CH.B., D.P.H.	Bray, Cy. Wicklow, Ireland
Osborne, Maurice M., Jr., M.D.	Cambridge, Mass.
Pai, Dattatraya N., M.B.,B.S.	Bombay, India
Pochedly, Carl E., A.B., M.D.	Mantua, Ohio
Rahn, Dorothy L., S.B.	Boulder, Colo.
Ramadwar, Dattatraya K., L.M.P., M.B.,B.S.	Raipur, India
Reddy, William J., A.B., S.M. IN HYG.	Brighton, Mass.
Richards, Mary Jane, A.B.	Springfield, Mass.
Richie, Jeanne, S.B., A.M.	Rialto, Calif.
Risquez-Iribarren, Rafael, M.D., M.P.H. (in absentia)	Caracas, Venezuela
Robinson, Arlene M., S.B., M.S.S.S.	Boston, Mass.

Rodrigues da Silva, Guilherme, M.D.	Salvador, Brazil
Russell, Harold E., S.B., A.M., PH.D.	Falls Church, Va.
Saroukhanian, Garegin, M.D., M.P.H.	Tehran, Iran
Scrimshaw, Nevin S., A.B., A.M., PH.D., M.D.	Guatemala City, Guatemala
Seigel, Daniel G., S.B., A.M., S.M.	Albany, N.Y.
Sencer, David J., M.D.	Columbus, Ga.
Sharma, Rameshwar, M.B.,B.S., M.D., M.P.H.	Jaipur, Rajasthan, India
Sogandares, Lucila E., S.B., S.M. (in absentia)	Panama City, Panama
Soricelli, David A., D.D.S.	West Pittston, Pa.
Sorli, Hedwig M., S.B., ED.M.	Lynnfield Center, Mass.
Spencer, Frederick J., M.B.,B.S.	Fredericksburg, Va.
Stevenson, Mary, A.B., M.D.	White Plains, N.Y.
Stone, John H., S.B., M.D.	Waldorf, Md.
Sudsaneh, Saovenee, B.SC.PHARM., S.M., S.M. IN HYG.	Bangkok, Thailand
Thomas, Clayton L., S.B., M.D.	Paducah, Ky.
Toyama, Toshio, M.D., DR.MED.SC., M.P.H.	Tokyo, Japan
Trishnananda, Mukda, M.D., M.P.H.	Dhonburi, Thailand
Upadhyay, Sudhanshu K., M.B., D.P.H., D.T.M.	Salkia, West Bengal, India
Uram, Jerome A., S.B., S.M., S.M. IN HYG. (in absentia)	Arlington, Va.
Vinson, John W., S.B.	Boston, Mass.
Warner, Arthur L., M.D.	Tucson, Ariz.
Warren, William V., S.B.	Cincinnati, Ohio
Watanabe, Gen-Ichi, M.D.	Niigata City, Japan
Watkins, Elizabeth L., A.B., M.S.S.A.	Chevy Chase, Md.
Wolf, Morris A., S.B.ED., A.M.	New York, N.Y.
Woodmansee, Terrell R., S.B., M.D.	Rexburg, Idaho
Worth, Robert McA., A.B., M.D.	Honolulu, Hawaii
Yanez F., Isaias, CH.E.	Concepcion, Chile
Zafir, Syed A., M.B.,B.S.	Karachi, Pakistan
Zomzely, Claire E., S.B., S.M. IN HYG.	Little Falls, N.J.

Part-Time Students

Calisti, Louis J. P., D.D.S.	Westwood, Mass.
Elashoff, Robert M., S.B., A.M.	Newton Center, Mass.
Garry, Dena L., S.B.	Tacoma, Wash.
Gibson, Virginia F., S.B.	Concord, N.C.
Hetherington, Eleanor K., A.B.	Cambridge, Mass.
Howard, Chester S., M.D.	Dhahran, Saudi Arabia

Kittrick, Irene A., S.B.	Millinocket, Maine
Nelson, Barbara E., S.B.	Waltham, Mass.
Powers, Mary Jane, S.B.	Natick, Mass.
Rahman, Akhlaqur, L.M.F., M.B.,B.S.	Dacca, East Pakistan
Wray, Marion E., S.B.	Worcester, Mass.

DEGREES

On June 13, 1957, the following degrees were conferred:

Doctor of Public Health

Charles Henry Moseley, A.B. (*Wofford Coll.*) 1928, M.D. (*Vanderbilt Univ.*) 1935, M.P.H. (*Harvard Univ.*) 1946
Thesis: Tuberculosis in Land Hesse, A New German State
Special Field: Epidemiology

Doctor of Science in Hygiene

Anthony Francis Bartholomay, A.B. (*Hamilton Coll.*) 1940, A.M. (*Syracuse Univ.*) 1942
Thesis: A Stochastic Approach to Chemical Reaction Kinetics
Special Field: Biostatistics

Master of Public Health, *Magna cum Laude*

Julia Louise Freitag, A.B. (*Cornell Univ.*) 1949, M.D. (*ibid.*) 1953
William Haddon, Jr., S.B. (*Massachusetts Inst. of Technology*) 1949, M.D. (*Harvard Univ.*) 1953
Louis Franklin Saylor, S.B. in Med. (*Univ. of Nebraska*) 1937, M.D. (*ibid.*) 1937

Master of Public Health, *cum Laude*

Lucy Houghton Conant, A.B. (*Radcliffe Coll.*) 1947, M.N. (*Yale Univ.*) 1950
John Rothchild Goldsmith, A.B. (*Reed Coll.*) 1942, M.D. (*Harvard Univ.*) 1945
Evan Roy Goltra, Jr., A.B. (*Dartmouth Coll.*) 1944, M.D. (*Long Island Coll. of Medicine*) 1947
John Edward Kennedy, S.B. (*Univ. of Vermont*) 1939, M.D. (*ibid.*) 1942
Lewis Everett Patrie, A.B. (*Colgate Univ.*) 1948, M.D. (*Albany Medical Coll.*) 1952
Thomas Franz Alfred Plaut, A.B. (*Swarthmore Coll.*) 1949, A.M. (*Harvard Univ.*) 1953, PH.D. (*ibid.*) 1956
Steven Polgar, A.M. (*Univ. of Chicago*) 1954, PH.D. (*ibid.*) 1956
Erik Roelsgaard, M.D. (*Univ. of Copenhagen, Denmark*) 1948
Zvi Shamir, M.D. (*Saint Joseph Univ., Lebanon*) 1945
Charles Alvin Veatch, S.B. (*Univ. of Illinois*) 1942, M.D. (*ibid.*) 1942

SCHOOL OF PUBLIC HEALTH

Master of Public Health

Austin James Barrett, A.B. (*Holy Cross Coll.*) 1940
Franz Bartl, M.D. (*Ludwig-Maximilian Univ., Munich, Germany*) 1950
Suksa Bhamornsathit, M.D. (*Univ. of Medical Sciences, Thailand*) 1949
Arthur Joseph Bindman, A.B. (*Harvard Univ.*) 1948, A.M. (*Boston Univ.*) 1949, PH.D. (*ibid.*) 1955
Harry Robert Brätt, A.B. (*San Diego State Coll.*) 1947, M.D. (*Univ. of California*) 1951
Edwin Wilson Brown, Jr., M.D. (*Harvard Univ.*) 1953
Werner Bustamante, M.D. (*Univ. of Chile*) 1940
Richard Michael Daley, S.B. (*Denver Univ.*) 1951
Ahmed Fouad El-Sherbini, M.B.,CH.B. (*Univ. of Alexandria, Egypt*) 1950, D.C.H. (*ibid.*) 1952, M.D. (*ibid.*) 1955
James Hamilton Fagan, A.B. (*New York Univ.*) 1938, M.D. (*ibid.*) 1942
Alfonso Gartner, M.D. (*National Univ., Colombia*) 1951
Molly O'Mara George, A.B. (*Univ. of Wyoming*) 1927, D.D.S. (*Univ. of Minnesota*) 1949
Edward Benjamin Gernert, D.M.D. (*Univ. of Louisville*) 1944
Helen Gideon, M.B.,B.S. (*Lady Hardinge Medical Coll., India*) 1942
John Charles Haberer, C.E. (*Rensselaer Polytechnic Inst.*) 1931
Kenneth William Hampson, M.D. (*Univ. of Western Ontario, Canada*) 1950
Jean Lenore Harney, L.M.S.S.A. (*West London Hospital Medical School, England*) 1952, M.R.C.S.,L.R.C.P. (*ibid.*) 1953
Hugh Burns Hay, M.D. (*Univ. of Western Ontario, Canada*) 1949
Warren George Hoag, D.V.M. (*Cornell Univ.*) 1944
Erik Holager, D.V.M. (*Veterinary Coll. of Norway*) 1941
David Beall Hoover, S.B.F. (*Univ. of Michigan*) 1951
Helen Marjorie Jones, S.B. (*New York Univ.*) 1952
Peter Joseph, B.A. (*Maharaja's Coll., India*) 1932, M.B.,B.S. (*Madris Med. Coll., India*) 1938, B.S.SC. (*ibid.*) 1952
Joseph Perkins Kesler, A.B. (*Univ. of Utah*) 1939, M.D. (*Univ. of Oregon*) 1941
James Garren Langford, S.B. (*Hahnemann Medical Coll.*) 1934, M.D. (*ibid.*) 1934
Christine Dorothy Lear, S.B. (*Univ. of Pennsylvania*) 1948
Ma Hpay, M.B.,B.S. (*Univ. of Rangoon, Burma*) 1948, D.T.M.&H. (*Univ. of London*) 1951, DIP.BACT. (*ibid.*) 1952
Casmira Anna Marciniszyn, S.B. (*Univ. of Pennsylvania*) 1951
Mary-Vesta Marston, A.B. (*Univ. of Maine*) 1946, M.N. (*Yale Univ.*) 1951
Mary Elizabeth Molloy, S.B. (*Boston Coll.*) 1954
Edna Florence Murphy, S.B. IN ED. (*Syracuse Univ.*) 1943

Seri Condar Nainggolan, M.D. (*Medical Faculty of the Airlangga Univ., Indonesia*) 1940
Josephine Lucy Pedulla, S.B. (*Syracuse Univ.*) 1952
Kottieth Karthiyarath Radhalaxmi, B.SC. (*Madras Univ., India*) 1947, DIP.S.S.A. (*Tata Inst. of Social Sciences, India*) 1950
Jean Ingram Rebentisch, S.B. (*Columbia Univ.*) 1940, A.M. (*ibid.*) 1943
Andrea Cruz Reyes, D.D.M. (*Univ. of the Philippines*) 1948
Jean Frederick Rogier, A.B. (*Univ. of Illinois*) 1931, M.D. (*Washington Univ.*) 1934
William Brodie Rothney, B.SC. (*Sir George Williams Coll., Canada*) 1948, M.D.,C.M. (*McGill Univ.*) 1952
Arthur Eugene Ryan, M.D. (*Creighton Univ.*) 1947
Rameshwar Sharma, M.B.,B.S. (*Univ. of Rajputana, India*) 1952, M.D. (*ibid.*) 1955
Norman Rose Sloan, A.B. (*Univ. of Pennsylvania*) 1924, M.D. (*ibid.*) 1927
Barbara Bass Stocking, S.B. (*Wayne Univ.*) 1953
Toshio Toyama, M.D. (*Keio Univ., Japan*) 1940, DR.MED.SC. (*ibid.*) 1949
Mukda Trishnananda, M.D. (*Univ. of Medical Sciences, Thailand*) 1950
John Robert Troxell, M.D. (*Univ. of Virginia*) 1943
Thomas William Turner, S.B. (*Univ. of Richmond*) 1947, M.D. (*Medical Coll. of Virginia*) 1952
Jerrold Levi Wheaton, A.B. (*Colgate Univ.*) 1943, M.D. (*New York Medical Coll.*) 1947
Henry Stuart Kendall Willis, Jr., A.B. (*Univ. of North Carolina*) 1948, M.D. (*Duke Univ.*) 1952
Jiro Yamamoto, M.D. (*Kyoto Univ., Japan*) 1949

Master of Industrial Health

Alberto Borda Roldan, M.D. (*National Univ. of Colombia*) 1950
George Wilson Cullum, S.B. (*Clemson Coll.*) 1944, M.D. (*Medical Coll. of South Carolina*) 1947
Robert Oscar Lipe, M.D. (*Duke Univ.*) 1947
Angel Rosendo Reyes y Lerma, M.D. (*Univ. of Santo Tomas, Philippines*) 1943

Master of Science in Hygiene

(*in the field of Industrial Hygiene*)

Charles Lyle Cheever, S.B. (*Michigan State Univ.*) 1950
Howard Warner Jackson, ED.B. (*Keene Teachers Coll.*) 1949
Jaime Moncada, CHEM.E. (*Univ. of Antioquia, Colombia*) 1954

Carl Glen Welty, Jr., S.B. (*Univ. of Wyoming*) 1952, S.M. (*Univ. of Rochester*) 1956

(*in the field of Nutrition*)

Margarita Irene Cimadevilla, DR. IN PHARM. (*Univ. of Havana, Cuba*) 1942.
Seymour Leon Kirschner, S.B. (*Long Island Univ.*) 1951, A.M. (*Brooklyn Coll.*) 1954
William John Reddy, A.B. (*Harvard Coll.*) 1949
Saovanee Sudsaneh, B.SC.PHARM. (*Univ. of Medical Sciences, Thailand*) 1953, S.M. (*Cornell Univ.*) 1956

(*in the field of Public Health Practice*)

Catherine Mary Casey, A.B. (*Emmanuel Coll.*) 1938, M.S.S.S. (*Fordham Univ.*) 1944
Dorothy Gail Gould, A.B. (*Smith Coll.*) 1954
Ruth Patricia Short, PH.B. (*Loyola Univ.*) 1943, M.S.W. (*ibid.*) 1947

(*in the field of Tropical Public Health*)

Vichitr Chaiyaporn, M.D. (*Univ. of Medical Sciences, Thailand*) 1950
Tongchai Papasarathorn, M.D. (*Univ. of Medical Sciences, Thailand*) 1952, M.P.H. (*School of Public Health, Thailand*) 1955

On March 10, 1958, the following degrees were conferred:

DOCTOR OF PUBLIC HEALTH

Richard Henry Daggy, S.B. (*Univ. of Minnesota*) 1934, S.M. (*ibid.*) 1938, PH.D. (*ibid.*) 1941, M.P.H. (*Harvard Univ.*) 1952
Thesis: The Prevention of Malaria in Oases of Eastern Saudi Arabia
Special Field: Tropical Public Health

DOCTOR OF SCIENCE IN HYGIENE

John Howard Ludwig, B.S.C.E. (*Univ. of California*) 1934, M.S.C.E. (*Univ. of Colorado*) 1941, S.M.HYG. (*Harvard Univ.*) 1956
Thesis: Thermal Destruction of Low Concentrations of Combustible Gases
Special Field: Industrial Hygiene

MASTER OF PUBLIC HEALTH

Margaret Gunn Kane, A.B. (*Wellesley Coll.*) 1936, S.B. (*Columbia Univ.*) 1941
Ivy Isabelle MacDonald, S.B. (*Simmons Coll.*) 1954
Isabel Stephens Pelloux, B.SC. (*Univ. of Western Ontario*) 1952

FALL TERM — FIRST PERIOD (September 22 to November 15, 1958)

		Credit Units	
PUBLIC HEALTH			
1a	The Human Community **	2.5	
40a,b,c	Biostatistics and Epidemiology ***	3	(7) †
42a,b	Seminar in Preventive Medicine and Public Health	1	(2)
ENVIRONMENTAL HYGIENE			
2a,b	Radiological Hygiene	1.5	(3)
BIOSTATISTICS			
1a,b	Principles of Biostatistics *	1.75	(3.5)
15a,b	Special Seminar	1	(2)
EPIDEMIOLOGY			
1a	Principles of Epidemiology *	2.5	
15a,b	Departmental Seminars	1	(2)
INDUSTRIAL HYGIENE			
2a,b	Industrial Air Analysis	2	(4)
4a,b	Aviation Health and Safety	1	(2)
MATERNAL AND CHILD HEALTH			
1a	Principles Basic to the Practice of Maternal and Child Health **	2.5	
15a,b	Advanced Seminar	1	(2)

		Credit Units	
MICROBIOLOGY			
1a,b	Ecology and Epidemiology of Infectious Diseases **	3	(6)
15a,b	Seminars in Microbiology	1	(2)
NUTRITION			
2a,b	Nutrition Seminar	.5	(1)
PHYSIOLOGY			
1a,b	Human Physiology	1	(2)
PUBLIC HEALTH PRACTICE			
15a,b	Special Seminars	1–2	(2–4)
40a,b	Factors in Health and Disease	1	(2)
TROPICAL PUBLIC HEALTH			
1a,b	Ecology and Epidemiology of Infectious Diseases ** (see listing under Microbiology 1a,b for credit units)		
2a,b	Ecology and Prevention of Tropical Diseases	1	(2)

Unscheduled courses: Biostatistics 40a,b; Industrial Hygiene 3a,3b, 6a,b; Microbiology 17a,b; Nutrition 17a,b; Physiology 17a,b; Public Health Practice 17a,b; Sanitary Engineering 2a,b. (See Department for description)

* Required of M.P.H. candidates ** Semi-elective courses for M.P.H. candidates *** Required of S.M. in Hyg. candidates

† Figures in parentheses are units for entire course, if this runs longer than one period

FALL TERM - FIRST PERIOD

September 22 to November 15, 1958

	Monday	Tuesday		Wednesday	Thursday		Friday		Saturday	
9	MATERNAL & CHILD HEALTH 1a**	EPIDEMIOLOGY 1a*		MATERNAL & CHILD HEALTH 1a**	EPIDEMIOLOGY 1a*		MATERNAL & CHILD HEALTH 1a**			P.H. 40 a,b,c BIO.-EPID. ***
10		BIOSTAT. 1a,b*	PHYS. 1a,b	PUBLIC HEALTH-1a** HUMAN COMMUNITY	BIOSTAT. 1a,b*	PHYS. 1a,b			MICRO.-T.P.H. 1a,b**	
11										
12	PUBLIC HEALTH-1a** HUMAN COMMUNITY	PUBLIC HEALTH 40 a,b,c BIO.-EPID. ***	P.H. 42 a,b PREV. MED. SEM.	DEPT. SEMINARS BIO. 15 a,b EPID. 15 a,b M.C.H. 15 a,b MICRO. 15 a,b NUTR. 2 a,b P.H.P. 15 a,b T.P.H. 2 a,b	PUBLIC HEALTH 40 a,b,c BIO.-EPID. ***	IND. HYG. 4 a,b AVIA. MED. SEM.	PUBLIC HEALTH-1a** HUMAN COMMUNITY			
1										
2										
3	BIOSTATISTICS 1a,b* (LAB.)	MICRO.-T.P.H. 1a,b** INFECTIOUS DISEASES	IND. HYG. 2a,b	ENV. HYG. 2 a,b RADIOLOGICAL HYGIENE	MICRO.-T.P.H. 1a,b** INF. DISEASES	IND. HYG. 2a,b	EPID. 1a* LECTURE & LAB.	P.H.P. 40 a,b FACTORS IN HEALTH & DISEASE		
4										
5										

* REQUIRED OF M.P.H. CANDIDATES

** SEMI-ELECTIVE COURSES FOR M.P.H. CANDIDATES

*** REQUIRED OF S.M. HYG. CANDIDATES

FALL TERM — SECOND PERIOD (November 17, 1958 to January 24, 1959)

		Credit Units	
PUBLIC HEALTH			
40a,b,c	Biostatistics and Epidemiology ***	2	(7) †
41b,c	Ecology and Epidemiology of Chronic and Non-Infectious Disease **	1	(3)
42a,b	Seminars in Preventive Medicine and Public Health	1	(2)
ENVIRONMENTAL HYGIENE			
2a,b	Radiological Hygiene	1.5	(3)
BIOSTATISTICS			
1a,b	Principles of Biostatistics *	1.75	(3.5)
15a,b	Special Seminar	1	(2)
EPIDEMIOLOGY			
15a,b	Departmental Seminars	1	(2)
INDUSTRIAL HYGIENE			
2a,b	Industrial Air Analysis	2	(4)
4a,b	Aviation Health and Safety	1	(2)
MATERNAL AND CHILD HEALTH			
15a,b	Advanced Seminar	1	(2)
40b	Nursing Services	1	

		Credit Units	
MICROBIOLOGY			
1a,b	Ecology and Epidemiology of Infectious Diseases **	3	(6)
15a,b	Seminars in Microbiology	1	(2)
NUTRITION			
1b,c	Public Health Nutrition **	1.5	(2.5)
2a,b	Nutrition Seminar	.5	(1)
PHYSIOLOGY			
1a,b	Human Physiology	1	(2)
PUBLIC HEALTH PRACTICE			
1b,c	Principles of Public Health Practice *	2	(3)
15a,b	Special Seminars	1–2	(2–4)
40a,b	Factors in Health and Disease	1	(2)
SANITARY ENGINEERING			
1b	Principles of Sanitary Engineering *	2.5	
TROPICAL PUBLIC HEALTH			
1a,b	Ecology and Epidemiology of Infectious Diseases ** (see listing under Microbiology 1a,b for credit units)		
2a,b	Ecology and Prevention of Tropical Diseases	1	(2)

Unscheduled courses: Biostatistics 40a,b; Industrial Hygiene 3a,3b, 6a,b; Microbiology 17a,b; Nutrition 17a,b; Physiology 17a,b; Public Health Practice 17a,b; Sanitary Engineering 2a,b. (See Department for description)

* Required of M.P.H. candidates ** Semi-elective courses for M.P.H. candidates *** Required of S.M. in Hyg. candidates

† Figures in parentheses are units for entire course, if this runs longer than one period

FALL TERM - SECOND PERIOD *November 17, 1958 to January 24, 1959*

	Monday	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*
9	P. H. PRACTICE 1b,c*	SANITARY ENGINEERING 1b*	P. H. PRACTICE 1b,c*	PUBLIC HEALTH 41 b,c** NON-INFECT. DISEASE	P. H. PRACTICE 1b,c*	SANITARY ENGINEERING 1b*
10		PHYS. 1a,b	BIOSTATISTICS 1 a,b*	SANITARY ENG. 1b* / PHYS. 1a,b		
11	BIOSTATISTICS 1a,b*	PUBLIC HEALTH 40 a,b,c BIO-EPID. *** / P.H. 42 a,b PREV. MED. SEM.	DEP'T. SEMINARS BIO. 15 a,b EPID. 15 a,b M.C.H. 15 a,b MICRO. 15 a,b NUTR. 2 a,b P.H.P. 15 a,b T.P.H. 2 a,b	PUBLIC HEALTH 40 a,b,c BIO-EPID. *** / IND. HYG. 4 a,b AVIA. MED. SEM.	NUTRITION 1b,c**	MICRO.-T.P.H. 1a,b** INFECTIOUS DISEASES / PUBLIC HEALTH 40a,b,c BIO.-EPID. ***
12	NUTRITION 1b,c**					
1						
2						
3	PUBLIC HEALTH 41 b,c** NON-INFECTIOUS DISEASE	MICRO.-T.P.H. 1a,b** INFECTIOUS DISEASES / IND. HYG. 2 a,b	ENV. HYG. 2 a,b RADIOLOGICAL HYGIENE / M. C. H. 40 b	MICRO.-T.P.H. 1a,b** INFECTIOUS DISEASES / IND. HYG. 2 a,b	BIOSTAT. 1a,b* (LAB.) / P.H.P. 40 a,b FACTORS IN HEALTH & DISEASE	
4						
5						

* REQUIRED OF M.P.H. CANDIDATES

** SEMI-ELECTIVE COURSES FOR M.P.H. CANDIDATES

*** REQUIRED OF S.M.HYG. CANDIDATES

		Credit Units	
Public Health			
4c,d	Research Methods in Community Health	2	(4) †
40a,b,c	Biostatistics and Epidemiology ***	2	(7)
41b,c	Ecology and Epidemiology of Chronic and Non-Infectious Disease **	2	(3)
Environmental Hygiene			
1c	Environmental Hygiene **	2.5	
40c,d	Special Environmental Problems	1	(2)
Biostatistics			
2c,d	Statistical Methodology	2	(4)
15c,d	Special Seminar	1	(2)
Epidemiology			
3c	Clinical Problems in Infectious Diseases	1	
15c,d	Departmental Seminars	1	(2)
Industrial Hygiene			
1c,d	Basic Problems in Occupational Health and Industrial Environments	3	(6)
2c,d	Industrial Air Analysis	2	(4)
5c,d	Human Factors in Occupational Adjustment and Safety	1	(2)
Maternal and Child Health			
15c,d	Advanced Seminar	2	(4)

		Credit Units	
Microbiology			
11c	Public Health Laboratory Procedures	2	
15c,d	Seminars in Microbiology	1	(2)
Nutrition			
1b,c	Public Health Nutrition **	1	(2.5)
2c,d	Nutrition Seminar	.5	(1)
3c	Biochemistry and Physiology of Nutrition	1	
4c,d	Laboratory Technics	1	(2)
Public Health Practice			
1b,c	Principles of Public Health Practice *	1	(3)
2c,d	Organization and Administration of Medical Care	1	(2)
4c,d	Control of Chronic Disease and Cancer, Gerontology and Rehabilitation	1	(2)
9c,d	The Control of Mental Disorders	1	(2)
10c,d	Organization and Administration of Health Agencies	3	(6)
11c,d	Health and Illness in Cross-Cultural Perspective	1	(2)
15c,d	Special Seminars	1–2	(2–4)
Tropical Public Health			
2c,d	Ecology and Prevention of Tropical Diseases	1	(2)

Unscheduled courses: Public Health 42c,d; Environ. Hyg. 2c,d; Biostat. 17c,d; Epidemiology 17c,d; Ind. Hyg. 3c,d, 4c,d, 7c,d; Maternal & Child Health 2c,d, 17c,d; Microb. 12c, 17c,d; Nutrition 17c,d; Physiol. 2c, 17c,d; P.H.P. 5c,d, 6c,d, 17c,d; San. Eng. 3c,d; T.P.H. 5c,d. (See Department for description)

* Required of M.P.H. candidates ** Semi-elective courses for M.P.H. candidates *** Required of S.M. in Hyg. candidates

† Figures in parentheses are units for entire course, if this runs longer than one period

SPRING TERM - THIRD PERIOD

January 26 to March 14, 1959

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
9						
10	PUBLIC HEALTH 41 b,c ** NON-INFECTIOUS DISEASE	PUBLIC HEALTH 40 a,b,c *** BIO.-EPID.	P. H. PRACTICE 1 b,c *	PUBLIC HEALTH 40 a,b,c *** BIO.-EPID.	PUBLIC HEALTH 41 b,c ** NON-INFECTIOUS DISEASE	PUBLIC HEALTH 40 a,b,c *** BIO.-EPID.
11						
12	NUTRITION 1 b,c **	ENV. HYGIENE 1 c **	DEP'T. SEMINARS ENV. HYG. 40 c,d BIO. 15 c,d EPID. 15 c,d · M.C.H. 15 c,d · MICRO. 15 c,d NUTR. 2 c,d P.H.P. 15 c,d T. P.H. 2 c,d	ENV. HYGIENE 1 c **	M. C. H. 15 c,d; NUT. 3 c; P.H. P. 4 c,d; IND. HYG. 5 c,d; EPID. 3 c	ENV. HYGIENE 1 c **
1						
2						
3	P. H. P. 10 c,d; IND. HYG. 1 c,d; MICRO. 11 c LAB. PROC.	IND. HYG. 2 c,d; BIO.-STAT-ISTICS 2 c,d; P. H. P. 9 c,d	P. H. P. 10 c,d; IND. HYG. 1 c,d FIELD TRIP; MICRO. 11 c; NUT. 4 c,d LAB. TECH.	IND. HYG. 2 c,d; BIO.-STAT-ISTICS 2 c,d; P. H. P. 2 c,d MED. CARE	P. H. P. 10 c,d; IND. HYG. 1 c,d; MICRO. 11 c LAB. PROC.	
4						EPID. 3 c CLINICS
5	M. C. H. 15 c,d	P. H. 4 c,d	P. H. P. 11 c,d	P. H. 4 c,d		
6						

* REQUIRED OF M.P.H. CANDIDATES

** SEMI-ELECTIVE COURSES FOR M.P.H. CANDIDATES

*** REQUIRED OF S.M.HYG. CANDIDATES

III

I

SCHOOL OF PUBLIC HEALTH

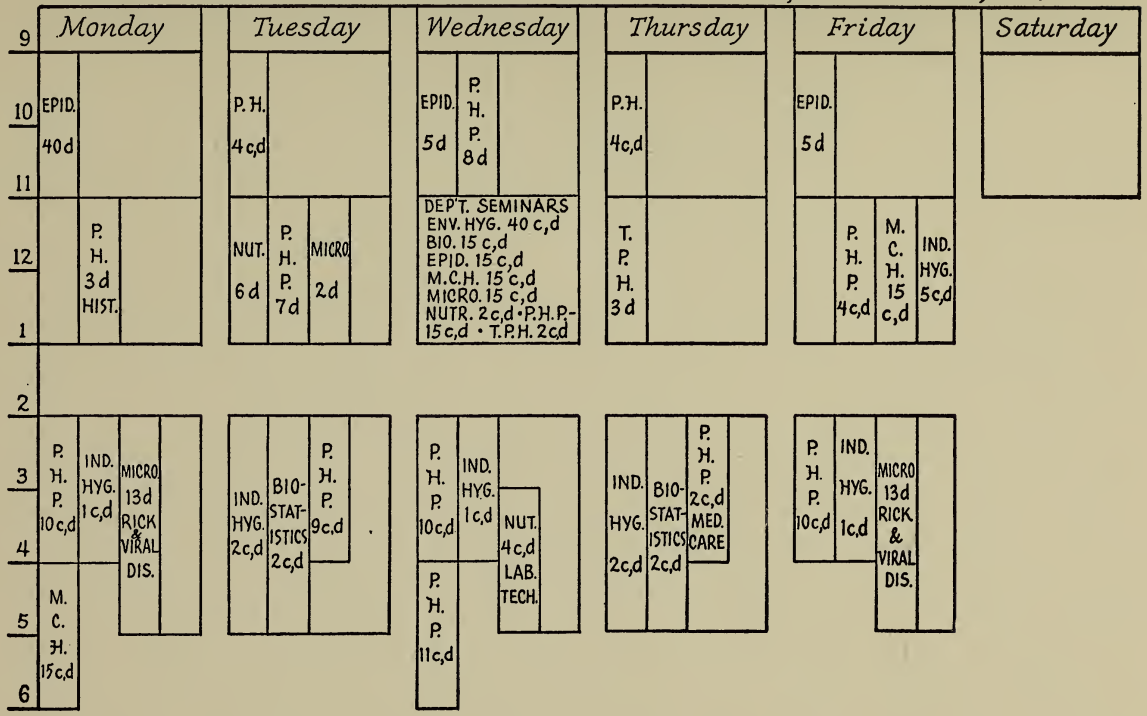
		Credit Units	
PUBLIC HEALTH			
3d	History and Philosophy of Public Health	1	
4c,d	Research Methods in Community Health	2	(4) †
ENVIRONMENTAL HYGIENE			
40c,d	Special Environmental Problems	1	(2)
BIOSTATISTICS			
2c,d	Statistical Methodology	2	(4)
15c,d	Special Seminar	1	(2)
EPIDEMIOLOGY			
5d	Epidemiologic Practice in Infectious Disease	2	
15c,d	Departmental Seminars	1	(2)
40d	Heredity and Environment in the Etiology of Disease	1	
INDUSTRIAL HYGIENE			
1c,d	Basic Problems in Occupational Health and Industrial Environments	3	(6)
2c,d	Industrial Air Analysis	2	(4)
5c,d	Human Factors in Occupational Adjustment and Safety	1	(2)
MATERNAL AND CHILD HEALTH			
15c,d	Advanced Seminar	2	(4)
MICROBIOLOGY			
2d	Current Research	1	
13d	Rickettsial and Viral Diseases of Public Health Importance	3	
15c,d	Seminars in Microbiology	1	(2)
NUTRITION			
2c,d	Nutrition Seminar	.5	(1)
4c,d	Laboratory Technics	1	(2)
6d	Clinical and Pathologic Aspects of Nutritional Disease	1	
PUBLIC HEALTH PRACTICE			
2c,d	Organization and Administration of Medical Care	1	(2)
4c,d	Control of Chronic Disease and Cancer, Gerontology and Rehabilitation	1	(2)
7d	Principles of Supervision and Consultation	1	
8d	Legal Problems of Organized Health Programs	1	
9c,d	The Control of Mental Disorders	1	(2)
10c,d	Organization and Administration of Health Agencies	3	(6)
11c,d	Health and Illness in Cross-Cultural Perspective	1	(2)
15c,d	Special Seminars	1–2	(2–4)
TROPICAL PUBLIC HEALTH			
2c,d	Ecology and Prevention of Tropical Diseases	1	(2)
3d	Problems in Tropical Health	1	

Unscheduled courses: Public Health 42c,d, 43d; Environ. Hyg. 2c,d; Biostat. 17c,d, 41d; Epidemiology 17c,d; Ind. Hyg. 3c,d, 4c,d, 7c,d; M.C.H. 2c,d, 3d, 17c,d; Microb. 17c,d; Nutrition 5d, 17c,d; Physiol. 17c,d, 40d, 41d; P.H.P. 5c,d, 6c,d, 17c,d; San. Eng. 3c,d; T.P.H. 5c,d, 40d, 41d. (See Department for description)

† Figures in parentheses are units for entire course, if this runs longer than one period

SPRING TERM - FOURTH PERIOD

April 6 to May 29, 1959



KEY TO AERIAL VIEW

I School of Public Health, 55 Shattuck Street
Administration, Departments of Biostatistics, Industrial Hygiene, Maternal and Child Health, Physiology and Public Health Practice

A Administration Building, Medical School
Second Floor, Library

B, C, D, E Laboratories and Classrooms, Medical School
Building E2, Room 238, Department of Tropical Public Health

F Vanderbilt Hall

II Peter Bent Brigham Hospital

III and V Children's Hospital

IV Boston Lying-in Hospital

VI School of Public Health, Huntington Building, 1 Shattuck Street, Departments of Epidemiology, Nutrition and Microbiology

A
B
C
D
E
F
I
II
III
IV
V
VI

SHATTUCK ST.
PRIVA
DANGER

CALENDAR FOR THE ACADEMIC YEAR 1958–1959

September 8, Monday to September 19, Friday	Orientation program for foreign students
September 15, Monday to September 19, Friday	Registration of students

Fall Term, September 22, 1958 to January 24, 1959

September 22, Monday	First Period classes begin
October 11, Saturday	Last day for changes in course of study for the fall term
October 13, Monday	Observance of Columbus Day: a holiday
November 11, Tuesday	Veterans' Day: a holiday
November 15, Saturday	First Period classes end
November 17, Monday	Second Period classes begin
November 27, Thursday	Thanksgiving Day: a holiday

Recess from Sunday, December 21, 1958 to Sunday, January 4, 1959, inclusive

January 24, Saturday	Second Period classes end

Spring Term, January 26, 1959 to June 11, 1959

January 26, Monday	Registration of new students
January 26, Monday	Third Period classes begin
February 14, Saturday	Last day for changes in course of study for the spring term
February 23, Monday	Observance of Washington's Birthday: a holiday
March 14, Saturday	Third Period classes end
March 16, Monday to March 28, Saturday	Laboratory, Library or Field Work

Recess from Sunday, March 29, 1959 to Sunday, April 5, 1959, inclusive

April 6, Monday	Fourth Period classes begin
May 29, Friday	Fourth Period classes end
May 30, Saturday	Memorial Day: a holiday
June 1, Monday	Comprehensive Examination
June 11, Thursday	Commencement

Huntington Building